

July 23, 2021

Report to:

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Bill to:

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cc: David Krizek

Project ID:

ACZ Project ID: L66732

Holly Beggy:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 24, 2021. This project has been assigned to ACZ's project number, L66732. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L66732. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 22, 2021. If the samples are determined to be hazardous, additional charges apply for disposal (typically \$11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.



Sue Webber has reviewed and  
approved this report.



**Hudbay Minerals**

Project ID:

Sample ID: DAW-1

ACZ Sample ID: **L66732-01**

Date Sampled: 06/10/21 11:27

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/10/21 13:15	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/12/21 16:09	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.583		*	mg/L	0.05	0.25	07/13/21 12:35	jlw
Aluminum, total (3050)	M6010D ICP	99	2680		*	mg/Kg	4.95	24.8	07/18/21 22:37	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/12/21 20:44	bsu
Antimony, total (3050)	M6020B ICP-MS	495	<0.198	U	*	mg/Kg	0.198	0.99	07/15/21 15:56	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00081	B	*	mg/L	0.0002	0.001	07/12/21 20:44	bsu
Arsenic, total (3050)	M6020B ICP-MS	495	2.30		*	mg/Kg	0.099	0.495	07/15/21 15:56	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/12/21 20:44	bsu
Cadmium, total (3050)	M6020B ICP-MS	495	0.168			mg/Kg	0.0248	0.124	07/15/21 15:56	mfm
Calcium (1312)	M6010D ICP	1	7.20			mg/L	0.1	0.5	07/13/21 12:35	jlw
Calcium, total (3050)	M6010D ICP	99	6490		*	mg/Kg	9.9	49.5	07/16/21 3:45	jlw
Copper (1312)	M6020B ICP-MS	1	0.0156		*	mg/L	0.0008	0.002	07/12/21 20:44	bsu
Copper, total (3050)	M6020B ICP-MS	495	66.8		*	mg/Kg	0.396	0.99	07/15/21 15:56	mfm
Iron (1312)	M6010D ICP	1	0.242		*	mg/L	0.06	0.15	07/13/21 12:35	jlw
Iron, total (3050)	M6010D ICP	99	4620		*	mg/Kg	5.94	14.9	07/20/21 2:43	kja
Lead (1312)	M6020B ICP-MS	1	0.00046	B	*	mg/L	0.0001	0.0005	07/12/21 20:44	bsu
Lead, total (3050)	M6020B ICP-MS	495	3.95		*	mg/Kg	0.0495	0.248	07/15/21 15:56	mfm
Magnesium (1312)	M6010D ICP	1	0.29	B	*	mg/L	0.2	1	07/13/21 12:35	jlw
Magnesium, total (3050)	M6010D ICP	99	981		*	mg/Kg	19.8	99	07/16/21 3:45	jlw
Manganese (1312)	M6010D ICP	1	0.011	B	*	mg/L	0.01	0.05	07/13/21 12:35	jlw
Manganese, total (3050)	M6010D ICP	99	149			mg/Kg	0.99	4.95	07/16/21 3:45	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 15:29	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	<2.4	U	*	ng/g	2.4	12	07/06/21 15:22	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/13/21 12:35	jlw
Molybdenum, total (3050)	M6010D ICP	99	<1.98	U		mg/Kg	1.98	9.9	07/16/21 3:45	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	07/12/21 20:44	bsu
Nickel, total (3050)	M6020B ICP-MS	495	1.87			mg/Kg	0.198	0.495	07/15/21 15:56	mfm
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	07/12/21 20:44	bsu
Selenium, total (3050)	M6020B ICP-MS	495	0.169		*	mg/Kg	0.0495	0.124	07/15/21 15:56	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/12/21 20:44	bsu
Thallium, total (3050)	M6020B ICP-MS	495	<0.0495	U		mg/Kg	0.0495	0.248	07/15/21 15:56	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/13/21 12:35	jlw
Zinc, total (3050)	M6010D ICP	99	17.2		*	mg/Kg	1.98	4.95	07/16/21 3:45	jlw

**Hudbay Minerals**

Project ID:

Sample ID: DAW-1

ACZ Sample ID: **L66732-01**

Date Sampled: 06/10/21 11:27

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.7		*	%	0.1	0.5	07/19/21 13:25	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.4	B	*	%	0.1	0.5	07/19/21 13:25	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	07/19/21 13:25	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.251		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.6		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	8.0		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	99.9		*	%	0.1	0.5	07/02/21 13:10	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	<0.01	U	*	%	0.01	0.1	07/19/21 13:12	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 12:31	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 8:25	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 8:25	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:16	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 12:30	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 12:30	jpb
Synthetic Precip. Leaching Procedure	M1312								07/08/21 5:33	zln/gkh

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: DAW-2

ACZ Sample ID: **L66732-02**

Date Sampled: 06/14/21 10:10

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/10/21 13:15	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/12/21 14:55	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.361			mg/L	0.05	0.25	07/13/21 22:30	kja
Aluminum, total (3050)	M6010D ICP	100	2310		*	mg/Kg	5	25	07/18/21 22:41	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/13/21 15:27	bsu
Antimony, total (3050)	M6020B ICP-MS	500	<0.2	U	*	mg/Kg	0.2	1	07/15/21 15:58	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00073	B	*	mg/L	0.0002	0.001	07/13/21 15:27	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	1.82		*	mg/Kg	0.1	0.5	07/15/21 15:58	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/13/21 15:27	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.148			mg/Kg	0.025	0.125	07/15/21 15:58	mfm
Calcium (1312)	M6010D ICP	1	8.54			mg/L	0.1	0.5	07/13/21 22:30	kja
Calcium, total (3050)	M6010D ICP	100	4160		*	mg/Kg	10	50	07/16/21 3:49	jlw
Copper (1312)	M6020B ICP-MS	1	0.0165		*	mg/L	0.0008	0.002	07/13/21 15:27	bsu
Copper, total (3050)	M6020B ICP-MS	500	38.1		*	mg/Kg	0.4	1	07/15/21 15:58	mfm
Iron (1312)	M6010D ICP	1	0.178		*	mg/L	0.06	0.15	07/13/21 22:30	kja
Iron, total (3050)	M6010D ICP	100	4980		*	mg/Kg	6	15	07/20/21 2:47	kja
Lead (1312)	M6020B ICP-MS	1	0.00031	B	*	mg/L	0.0001	0.0005	07/13/21 15:27	bsu
Lead, total (3050)	M6020B ICP-MS	500	3.97		*	mg/Kg	0.05	0.25	07/15/21 15:58	mfm
Magnesium (1312)	M6010D ICP	1	0.65	B	*	mg/L	0.2	1	07/13/21 22:30	kja
Magnesium, total (3050)	M6010D ICP	100	575		*	mg/Kg	20	100	07/16/21 3:49	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/13/21 22:30	kja
Manganese, total (3050)	M6010D ICP	100	175			mg/Kg	1	5	07/16/21 3:49	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:23	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	<2.56	U	*	ng/g	2.56	12.8	07/06/21 15:30	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/13/21 22:30	kja
Molybdenum, total (3050)	M6010D ICP	100	<2	U		mg/Kg	2	10	07/16/21 3:49	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00089	B	*	mg/L	0.0004	0.001	07/13/21 15:27	bsu
Nickel, total (3050)	M6020B ICP-MS	500	1.72			mg/Kg	0.2	0.5	07/15/21 15:58	mfm
Selenium (1312)	M6020B ICP-MS	1	0.00010	B	*	mg/L	0.0001	0.00025	07/13/21 15:27	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.138		*	mg/Kg	0.05	0.125	07/15/21 15:58	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/13/21 15:27	bsu
Thallium, total (3050)	M6020B ICP-MS	500	<0.05	U		mg/Kg	0.05	0.25	07/15/21 15:58	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/13/21 22:30	kja
Zinc, total (3050)	M6010D ICP	100	9.77		*	mg/Kg	2	5	07/16/21 3:49	jlw

**Hudbay Minerals**

Project ID:

Sample ID: DAW-2

ACZ Sample ID: **L66732-02**

Date Sampled: 06/14/21 10:10

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	07/19/21 13:50	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.1	B	*	%	0.1	0.5	07/19/21 13:50	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.2	B	*	%	0.1	0.5	07/19/21 13:50	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.321		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.4		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	7.6		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	100.0		*	%	0.1	0.5	07/02/21 19:56	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	<0.01	U	*	%	0.01	0.1	07/19/21 13:30	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 12:34	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 8:44	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 8:44	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:20	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 12:33	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 12:33	jpb
Synthetic Precip. Leaching Procedure	M1312								07/09/21 7:21	zln

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: DAW-3

ACZ Sample ID: **L66732-03**

Date Sampled: 06/14/21 09:40

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/10/21 13:15	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/12/21 15:23	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.454			mg/L	0.05	0.25	07/13/21 22:33	kja
Aluminum, total (3050)	M6010D ICP	100	2160		*	mg/Kg	5	25	07/18/21 22:45	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/13/21 15:29	bsu
Antimony, total (3050)	M6020B ICP-MS	500	<0.2	U	*	mg/Kg	0.2	1	07/15/21 15:59	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00074	B	*	mg/L	0.0002	0.001	07/13/21 15:29	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	1.41		*	mg/Kg	0.1	0.5	07/15/21 15:59	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/13/21 15:29	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.101	B		mg/Kg	0.025	0.125	07/15/21 15:59	mfm
Calcium (1312)	M6010D ICP	1	8.92			mg/L	0.1	0.5	07/13/21 22:33	kja
Calcium, total (3050)	M6010D ICP	100	1500		*	mg/Kg	10	50	07/16/21 3:52	jlw
Copper (1312)	M6020B ICP-MS	1	0.0182		*	mg/L	0.0008	0.002	07/13/21 15:29	bsu
Copper, total (3050)	M6020B ICP-MS	500	33.9		*	mg/Kg	0.4	1	07/15/21 15:59	mfm
Iron (1312)	M6010D ICP	1	0.250		*	mg/L	0.06	0.15	07/13/21 22:33	kja
Iron, total (3050)	M6010D ICP	100	3590		*	mg/Kg	6	15	07/20/21 2:50	kja
Lead (1312)	M6020B ICP-MS	1	0.00057		*	mg/L	0.0001	0.0005	07/13/21 15:29	bsu
Lead, total (3050)	M6020B ICP-MS	500	2.93		*	mg/Kg	0.05	0.25	07/15/21 15:59	mfm
Magnesium (1312)	M6010D ICP	1	0.74	B	*	mg/L	0.2	1	07/13/21 22:33	kja
Magnesium, total (3050)	M6010D ICP	100	554		*	mg/Kg	20	100	07/16/21 3:52	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/13/21 22:33	kja
Manganese, total (3050)	M6010D ICP	100	103			mg/Kg	1	5	07/16/21 3:52	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:23	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	<2.52	U	*	ng/g	2.52	12.6	07/06/21 15:39	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/13/21 22:33	kja
Molybdenum, total (3050)	M6010D ICP	100	<2	U		mg/Kg	2	10	07/16/21 3:52	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00071	B	*	mg/L	0.0004	0.001	07/13/21 15:29	bsu
Nickel, total (3050)	M6020B ICP-MS	500	1.50			mg/Kg	0.2	0.5	07/15/21 15:59	mfm
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	07/13/21 15:29	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.143		*	mg/Kg	0.05	0.125	07/15/21 15:59	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/13/21 15:29	bsu
Thallium, total (3050)	M6020B ICP-MS	500	<0.05	U		mg/Kg	0.05	0.25	07/15/21 15:59	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/13/21 22:33	kja
Zinc, total (3050)	M6010D ICP	100	9.06		*	mg/Kg	2	5	07/16/21 3:52	jlw

**Hudbay Minerals**

Project ID:

Sample ID: DAW-3

ACZ Sample ID: **L66732-03**

Date Sampled: 06/14/21 09:40

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/19/21 14:03	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.1	B	*	%	0.1	0.5	07/19/21 14:03	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	07/19/21 14:03	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.333		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.4		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	7.5		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	99.9		*	%	0.1	0.5	07/02/21 23:19	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	<0.01	U	*	%	0.01	0.1	07/19/21 13:36	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 12:36	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 9:04	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 9:04	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:21	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 12:37	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 12:37	jpb
Synthetic Precip. Leaching Procedure	M1312								07/09/21 8:32	zln

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: DAW-4

ACZ Sample ID: **L66732-04**

Date Sampled: 06/14/21 09:40

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/10/21 13:15	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/12/21 15:52	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.411			mg/L	0.05	0.25	07/13/21 22:44	kja
Aluminum, total (3050)	M6010D ICP	100	2210		*	mg/Kg	5	25	07/18/21 22:49	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/13/21 15:31	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.317	B	*	mg/Kg	0.2	1	07/15/21 16:01	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00066	B	*	mg/L	0.0002	0.001	07/13/21 15:31	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	1.58		*	mg/Kg	0.1	0.5	07/15/21 16:01	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/13/21 15:31	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.144			mg/Kg	0.025	0.125	07/15/21 16:01	mfm
Calcium (1312)	M6010D ICP	1	8.03			mg/L	0.1	0.5	07/13/21 22:44	kja
Calcium, total (3050)	M6010D ICP	100	6710		*	mg/Kg	10	50	07/16/21 3:56	jlw
Copper (1312)	M6020B ICP-MS	1	0.0185		*	mg/L	0.0008	0.002	07/13/21 15:31	bsu
Copper, total (3050)	M6020B ICP-MS	500	29.4		*	mg/Kg	0.4	1	07/15/21 16:01	mfm
Iron (1312)	M6010D ICP	1	0.202		*	mg/L	0.06	0.15	07/13/21 22:44	kja
Iron, total (3050)	M6010D ICP	100	3160		*	mg/Kg	6	15	07/20/21 2:54	kja
Lead (1312)	M6020B ICP-MS	1	0.00051		*	mg/L	0.0001	0.0005	07/13/21 15:31	bsu
Lead, total (3050)	M6020B ICP-MS	500	3.10		*	mg/Kg	0.05	0.25	07/15/21 16:01	mfm
Magnesium (1312)	M6010D ICP	1	0.65	B	*	mg/L	0.2	1	07/13/21 22:44	kja
Magnesium, total (3050)	M6010D ICP	100	596		*	mg/Kg	20	100	07/16/21 3:56	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/13/21 22:44	kja
Manganese, total (3050)	M6010D ICP	100	140			mg/Kg	1	5	07/16/21 3:56	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:24	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	<2.16	U	*	ng/g	2.16	10.8	07/06/21 15:48	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/13/21 22:44	kja
Molybdenum, total (3050)	M6010D ICP	100	<2	U		mg/Kg	2	10	07/16/21 3:56	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00080	B	*	mg/L	0.0004	0.001	07/13/21 15:31	bsu
Nickel, total (3050)	M6020B ICP-MS	500	1.36			mg/Kg	0.2	0.5	07/15/21 16:01	mfm
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	07/13/21 15:31	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.129		*	mg/Kg	0.05	0.125	07/15/21 16:01	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/13/21 15:31	bsu
Thallium, total (3050)	M6020B ICP-MS	500	<0.05	U		mg/Kg	0.05	0.25	07/15/21 16:01	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/13/21 22:44	kja
Zinc, total (3050)	M6010D ICP	100	8.06		*	mg/Kg	2	5	07/16/21 3:56	jlw

**Hudbay Minerals**

Project ID:

Sample ID: DAW-4

ACZ Sample ID: **L66732-04**

Date Sampled: 06/14/21 09:40

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/19/21 14:15	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.1	B	*	%	0.1	0.5	07/19/21 14:15	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	07/19/21 14:15	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.317		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.4		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	7.5		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	99.9		*	%	0.1	0.5	07/03/21 2:42	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	<0.01	U	*	%	0.01	0.1	07/19/21 13:42	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 12:39	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 9:24	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 9:24	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:23	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 12:41	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 12:41	jpb
Synthetic Precip. Leaching Procedure	M1312								07/09/21 9:42	zln

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: D2-18

ACZ Sample ID: **L66732-05**

Date Sampled: 06/10/21 09:23

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/10/21 13:15	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/12/21 16:29	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.435		*	mg/L	0.05	0.25	07/13/21 12:38	jlw
Aluminum, total (3050)	M6010D ICP	100	3330		*	mg/Kg	5	25	07/18/21 22:52	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/12/21 20:50	bsu
Antimony, total (3050)	M6020B ICP-MS	500	<0.2	U	*	mg/Kg	0.2	1	07/15/21 16:05	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00077	B	*	mg/L	0.0002	0.001	07/12/21 20:50	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	2.04		*	mg/Kg	0.1	0.5	07/15/21 16:05	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/12/21 20:50	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.141			mg/Kg	0.025	0.125	07/15/21 16:05	mfm
Calcium (1312)	M6010D ICP	1	8.58			mg/L	0.1	0.5	07/13/21 12:38	jlw
Calcium, total (3050)	M6010D ICP	100	3270		*	mg/Kg	10	50	07/16/21 4:03	jlw
Copper (1312)	M6020B ICP-MS	1	0.00475		*	mg/L	0.0008	0.002	07/12/21 20:50	bsu
Copper, total (3050)	M6020B ICP-MS	500	8.70		*	mg/Kg	0.4	1	07/15/21 16:05	mfm
Iron (1312)	M6010D ICP	1	0.237		*	mg/L	0.06	0.15	07/13/21 12:38	jlw
Iron, total (3050)	M6010D ICP	100	5920		*	mg/Kg	6	15	07/20/21 2:58	kja
Lead (1312)	M6020B ICP-MS	1	0.00040	B	*	mg/L	0.0001	0.0005	07/12/21 20:50	bsu
Lead, total (3050)	M6020B ICP-MS	500	4.26		*	mg/Kg	0.05	0.25	07/15/21 16:05	mfm
Magnesium (1312)	M6010D ICP	1	0.86	B	*	mg/L	0.2	1	07/13/21 12:38	jlw
Magnesium, total (3050)	M6010D ICP	100	787		*	mg/Kg	20	100	07/16/21 4:03	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/13/21 12:38	jlw
Manganese, total (3050)	M6010D ICP	100	123			mg/Kg	1	5	07/16/21 4:03	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 15:30	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	2.97	B	*	ng/g	1.5	7.5	07/08/21 10:28	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/13/21 12:38	jlw
Molybdenum, total (3050)	M6010D ICP	100	<2	U		mg/Kg	2	10	07/16/21 4:03	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00065	B	*	mg/L	0.0004	0.001	07/12/21 20:50	bsu
Nickel, total (3050)	M6020B ICP-MS	500	2.05			mg/Kg	0.2	0.5	07/15/21 16:05	mfm
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	07/12/21 20:50	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.128		*	mg/Kg	0.05	0.125	07/15/21 16:05	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/12/21 20:50	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.0587	B		mg/Kg	0.05	0.25	07/15/21 16:05	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/13/21 12:38	jlw
Zinc, total (3050)	M6010D ICP	100	13.0		*	mg/Kg	2	5	07/16/21 4:03	jlw

**Hudbay Minerals**

Project ID:

Sample ID: D2-18

ACZ Sample ID: **L66732-05**

Date Sampled: 06/10/21 09:23

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	07/19/21 14:28	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.3	B	*	%	0.1	0.5	07/19/21 14:28	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	07/19/21 14:28	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.384		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.5		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	7.7		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	100.0		*	%	0.1	0.5	07/03/21 6:05	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	<0.01	U	*	%	0.01	0.1	07/19/21 13:48	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 12:42	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 9:44	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 9:44	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:25	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 12:45	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 12:45	jpb
Synthetic Precip. Leaching Procedure	M1312								07/08/21 6:35	zln/gkh

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: D2-19

ACZ Sample ID: **L66732-06**

Date Sampled: 06/10/21 10:44

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP								07/12/21 16:50	jlw
Total Hot Plate Digestion (1312)	M3010A ICP-MS				*				07/10/21 13:15	mfm

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.148	B	*	mg/L	0.05	0.25	07/13/21 12:42	jlw
Aluminum, total (3050)	M6010D ICP	101	20900		*	mg/Kg	5.05	25.3	07/18/21 22:56	kja
Antimony (1312)	M6020B ICP-MS	1	0.00067	B	*	mg/L	0.0004	0.002	07/12/21 20:51	bsu
Antimony, total (3050)	M6020B ICP-MS	505	0.471	B	*	mg/Kg	0.202	1.01	07/15/21 16:07	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.0118		*	mg/L	0.0002	0.001	07/12/21 20:51	bsu
Arsenic, total (3050)	M6020B ICP-MS	1010	7.68			mg/Kg	0.202	1.01	07/20/21 20:01	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/12/21 20:51	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	0.652			mg/Kg	0.0253	0.126	07/15/21 16:07	mfm
Calcium (1312)	M6010D ICP	1	16.7			mg/L	0.1	0.5	07/13/21 12:42	jlw
Calcium, total (3050)	M6010D ICP	101	12500		*	mg/Kg	10.1	50.5	07/16/21 4:07	jlw
Copper (1312)	M6020B ICP-MS	1	0.0128		*	mg/L	0.0008	0.002	07/12/21 20:51	bsu
Copper, total (3050)	M6020B ICP-MS	505	101		*	mg/Kg	0.404	1.01	07/21/21 11:59	mfm
Iron (1312)	M6010D ICP	1	<0.06	U	*	mg/L	0.06	0.15	07/13/21 12:42	jlw
Iron, total (3050)	M6010D ICP	101	21000		*	mg/Kg	6.06	15.2	07/20/21 3:01	kja
Lead (1312)	M6020B ICP-MS	1	0.00014	B	*	mg/L	0.0001	0.0005	07/12/21 20:51	bsu
Lead, total (3050)	M6020B ICP-MS	505	29.2		*	mg/Kg	0.0505	0.253	07/15/21 16:07	mfm
Magnesium (1312)	M6010D ICP	1	1.28		*	mg/L	0.2	1	07/13/21 12:42	jlw
Magnesium, total (3050)	M6010D ICP	101	6230		*	mg/Kg	20.2	101	07/16/21 4:07	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/13/21 12:42	jlw
Manganese, total (3050)	M6010D ICP	101	649			mg/Kg	1.01	5.05	07/16/21 4:07	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 15:31	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	36.6		*	ng/g	6.06	30.3	07/08/21 10:44	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/13/21 12:42	jlw
Molybdenum, total (3050)	M6010D ICP	101	<2.02	U		mg/Kg	2.02	10.1	07/16/21 4:07	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00066	B	*	mg/L	0.0004	0.001	07/12/21 20:51	bsu
Nickel, total (3050)	M6020B ICP-MS	505	15.7			mg/Kg	0.202	0.505	07/21/21 11:59	mfm
Selenium (1312)	M6020B ICP-MS	1	0.00035		*	mg/L	0.0001	0.00025	07/12/21 20:51	bsu
Selenium, total (3050)	M6020B ICP-MS	505	0.351		*	mg/Kg	0.0505	0.126	07/15/21 16:07	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/12/21 20:51	bsu
Thallium, total (3050)	M6020B ICP-MS	505	0.321			mg/Kg	0.0505	0.253	07/15/21 16:07	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/13/21 12:42	jlw
Zinc, total (3050)	M6010D ICP	101	101		*	mg/Kg	2.02	5.05	07/16/21 4:07	jlw

**Hudbay Minerals**

Project ID:

Sample ID: D2-19

ACZ Sample ID: **L66732-06**

Date Sampled: 06/10/21 10:44

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	07/19/21 14:41	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.3	B	*	%	0.1	0.5	07/19/21 14:41	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	07/19/21 14:41	jpb
Conductivity @25C	SM2510B									
Conductivity		1	1.05		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.5		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	7.8		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	98.5		*	%	0.1	0.5	07/03/21 9:28	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.02	B	*	%	0.01	0.1	07/19/21 13:54	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 12:45	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 10:03	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 10:03	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:26	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 12:48	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 12:48	jpb
Synthetic Precip. Leaching Procedure	M1312								07/08/21 7:37	zln/gkh

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: D2-20

ACZ Sample ID: **L66732-07**

Date Sampled: 06/14/21 07:24

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/10/21 13:15	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/12/21 16:21	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.268			mg/L	0.05	0.25	07/13/21 22:48	kja
Aluminum, total (3050)	M6010D ICP	100	5230		*	mg/Kg	5	25	07/18/21 23:00	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/13/21 15:34	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.440	B	*	mg/Kg	0.2	1	07/15/21 16:12	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00255		*	mg/L	0.0002	0.001	07/13/21 15:34	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	3.74		*	mg/Kg	0.1	0.5	07/15/21 16:12	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/13/21 15:34	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.238			mg/Kg	0.025	0.125	07/15/21 16:12	mfm
Calcium (1312)	M6010D ICP	1	6.81			mg/L	0.1	0.5	07/13/21 22:48	kja
Calcium, total (3050)	M6010D ICP	100	5730		*	mg/Kg	10	50	07/16/21 4:18	jlw
Copper (1312)	M6020B ICP-MS	1	0.00521		*	mg/L	0.0008	0.002	07/13/21 15:34	bsu
Copper, total (3050)	M6020B ICP-MS	500	13.6		*	mg/Kg	0.4	1	07/15/21 16:12	mfm
Iron (1312)	M6010D ICP	1	0.143	B	*	mg/L	0.06	0.15	07/13/21 22:48	kja
Iron, total (3050)	M6010D ICP	100	7570		*	mg/Kg	6	15	07/20/21 3:05	kja
Lead (1312)	M6020B ICP-MS	1	0.00035	B	*	mg/L	0.0001	0.0005	07/13/21 15:34	bsu
Lead, total (3050)	M6020B ICP-MS	500	10.8		*	mg/Kg	0.05	0.25	07/15/21 16:12	mfm
Magnesium (1312)	M6010D ICP	1	0.63	B	*	mg/L	0.2	1	07/13/21 22:48	kja
Magnesium, total (3050)	M6010D ICP	100	1660		*	mg/Kg	20	100	07/16/21 4:18	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/13/21 22:48	kja
Manganese, total (3050)	M6010D ICP	100	156			mg/Kg	1	5	07/16/21 4:18	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:25	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	5.4	B	*	ng/g	1.56	7.8	07/07/21 17:08	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/13/21 22:48	kja
Molybdenum, total (3050)	M6010D ICP	100	<2	U		mg/Kg	2	10	07/16/21 4:18	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00077	B	*	mg/L	0.0004	0.001	07/13/21 15:34	bsu
Nickel, total (3050)	M6020B ICP-MS	500	3.48			mg/Kg	0.2	0.5	07/15/21 16:12	mfm
Selenium (1312)	M6020B ICP-MS	1	0.00014	B	*	mg/L	0.0001	0.00025	07/13/21 15:34	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.123	B	*	mg/Kg	0.05	0.125	07/15/21 16:12	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/13/21 15:34	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.0560	B		mg/Kg	0.05	0.25	07/15/21 16:12	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/13/21 22:48	kja
Zinc, total (3050)	M6010D ICP	100	26.7		*	mg/Kg	2	5	07/16/21 4:18	jlw

**Hudbay Minerals**

Project ID:

Sample ID: D2-20

ACZ Sample ID: **L66732-07**

Date Sampled: 06/14/21 07:24

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/19/21 14:53	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.2	B	*	%	0.1	0.5	07/19/21 14:53	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.2	B	*	%	0.1	0.5	07/19/21 14:53	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.247		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.4		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	8.1		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	99.7		*	%	0.1	0.5	07/03/21 12:51	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	<0.01	U	*	%	0.01	0.1	07/19/21 14:00	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 12:47	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 10:23	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 10:23	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:28	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 12:52	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 12:52	jpb
Synthetic Precip. Leaching Procedure	M1312								07/09/21 10:53	zln

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: D2-21

ACZ Sample ID: **L66732-08**

Date Sampled: 06/14/21 07:24

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/10/21 13:15	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/12/21 16:50	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.323			mg/L	0.05	0.25	07/13/21 22:56	kja
Aluminum, total (3050)	M6010D ICP	100	5810		*	mg/Kg	5	25	07/18/21 23:18	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/13/21 15:36	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.318	B	*	mg/Kg	0.2	1	07/15/21 16:14	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00269		*	mg/L	0.0002	0.001	07/13/21 15:36	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	4.43		*	mg/Kg	0.1	0.5	07/15/21 16:14	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/13/21 15:36	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.279			mg/Kg	0.025	0.125	07/15/21 16:14	mfm
Calcium (1312)	M6010D ICP	1	7.64			mg/L	0.1	0.5	07/13/21 22:56	kja
Calcium, total (3050)	M6010D ICP	100	4820		*	mg/Kg	10	50	07/16/21 4:29	jlw
Copper (1312)	M6020B ICP-MS	1	0.00617		*	mg/L	0.0008	0.002	07/13/21 15:36	bsu
Copper, total (3050)	M6020B ICP-MS	500	13.4		*	mg/Kg	0.4	1	07/15/21 16:14	mfm
Iron (1312)	M6010D ICP	1	0.180		*	mg/L	0.06	0.15	07/13/21 22:56	kja
Iron, total (3050)	M6010D ICP	100	8220		*	mg/Kg	6	15	07/20/21 3:24	kja
Lead (1312)	M6020B ICP-MS	1	0.00045	B	*	mg/L	0.0001	0.0005	07/13/21 15:36	bsu
Lead, total (3050)	M6020B ICP-MS	500	11.8		*	mg/Kg	0.05	0.25	07/15/21 16:14	mfm
Magnesium (1312)	M6010D ICP	1	0.74	B	*	mg/L	0.2	1	07/13/21 22:56	kja
Magnesium, total (3050)	M6010D ICP	100	1990		*	mg/Kg	20	100	07/16/21 4:29	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/13/21 22:56	kja
Manganese, total (3050)	M6010D ICP	100	225			mg/Kg	1	5	07/16/21 4:29	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:26	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	4.6	B	*	ng/g	1.57	7.85	07/07/21 17:16	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/13/21 22:56	kja
Molybdenum, total (3050)	M6010D ICP	100	<2	U		mg/Kg	2	10	07/16/21 4:29	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00078	B	*	mg/L	0.0004	0.001	07/13/21 15:36	bsu
Nickel, total (3050)	M6020B ICP-MS	500	4.28			mg/Kg	0.2	0.5	07/15/21 16:14	mfm
Selenium (1312)	M6020B ICP-MS	1	0.00017	B	*	mg/L	0.0001	0.00025	07/13/21 15:36	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.149		*	mg/Kg	0.05	0.125	07/15/21 16:14	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/13/21 15:36	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.0695	B		mg/Kg	0.05	0.25	07/15/21 16:14	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/13/21 22:56	kja
Zinc, total (3050)	M6010D ICP	100	33.5		*	mg/Kg	2	5	07/16/21 4:29	jlw

**Hudbay Minerals**

Project ID:

Sample ID: D2-21

ACZ Sample ID: **L66732-08**

Date Sampled: 06/14/21 07:24

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	07/19/21 15:06	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.3	B	*	%	0.1	0.5	07/19/21 15:06	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	07/19/21 15:06	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.280		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.8		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	7.9		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	99.6		*	%	0.1	0.5	07/03/21 16:14	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.01	B	*	%	0.01	0.1	07/19/21 14:06	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 12:50	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 11:23	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 11:23	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:30	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 12:56	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 12:56	jpb
Synthetic Precip. Leaching Procedure	M1312								07/09/21 12:04	zln

**Arizona license number: AZ0102**

### Hudbay Minerals

Project ID:

Sample ID: D1-1

ACZ Sample ID: **L66732-09**

Date Sampled: 06/16/21 07:42

Date Received: 06/24/21

Sample Matrix: Soil

#### Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/14/21 8:45	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/14/21 13:47	jlw

#### Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.307		*	mg/L	0.05	0.25	07/15/21 23:36	jlw
Aluminum, total (3050)	M6010D ICP	100	7630		*	mg/Kg	5	25	07/18/21 23:25	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/15/21 15:53	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.410	B	*	mg/Kg	0.2	1	07/15/21 16:15	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00147		*	mg/L	0.0002	0.001	07/15/21 15:53	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	6.77		*	mg/Kg	0.1	0.5	07/15/21 16:15	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/15/21 15:53	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.753			mg/Kg	0.025	0.125	07/15/21 16:15	mfm
Calcium (1312)	M6010D ICP	1	10.5			mg/L	0.1	0.5	07/15/21 12:23	jlw
Calcium, total (3050)	M6010D ICP	100	50000		*	mg/Kg	10	50	07/16/21 4:33	jlw
Copper (1312)	M6020B ICP-MS	1	0.0483			mg/L	0.0008	0.002	07/15/21 15:53	bsu
Copper, total (3050)	M6020B ICP-MS	500	941		*	mg/Kg	0.4	1	07/15/21 16:15	mfm
Iron (1312)	M6010D ICP	1	0.302		*	mg/L	0.06	0.15	07/15/21 12:23	jlw
Iron, total (3050)	M6010D ICP	100	28900		*	mg/Kg	6	15	07/20/21 3:27	kja
Lead (1312)	M6020B ICP-MS	1	0.00123		*	mg/L	0.0001	0.0005	07/15/21 15:53	bsu
Lead, total (3050)	M6020B ICP-MS	500	20.5		*	mg/Kg	0.05	0.25	07/15/21 16:15	mfm
Magnesium (1312)	M6010D ICP	1	0.39	B	*	mg/L	0.2	1	07/15/21 12:23	jlw
Magnesium, total (3050)	M6010D ICP	100	4590		*	mg/Kg	20	100	07/16/21 4:33	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/15/21 12:23	jlw
Manganese, total (3050)	M6010D ICP	100	783			mg/Kg	1	5	07/16/21 4:33	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:45	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	5.29	B	*	ng/g	1.46	7.3	07/07/21 17:25	mlh
Molybdenum (1312)	M6010D ICP	1	0.026	B	*	mg/L	0.02	0.1	07/15/21 12:23	jlw
Molybdenum, total (3050)	M6010D ICP	100	27.4			mg/Kg	2	10	07/16/21 4:33	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	07/15/21 15:53	bsu
Nickel, total (3050)	M6020B ICP-MS	500	3.98			mg/Kg	0.2	0.5	07/15/21 16:15	mfm
Selenium (1312)	M6020B ICP-MS	1	0.00034		*	mg/L	0.0001	0.00025	07/15/21 15:53	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.516		*	mg/Kg	0.05	0.125	07/15/21 16:15	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/15/21 15:53	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.137	B		mg/Kg	0.05	0.25	07/15/21 16:15	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/15/21 12:23	jlw
Zinc, total (3050)	M6010D ICP	100	113		*	mg/Kg	2	5	07/16/21 4:33	jlw

**Hudbay Minerals**

Project ID:

Sample ID: D1-1

ACZ Sample ID: **L66732-09**

Date Sampled: 06/16/21 07:42

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.7		*	%	0.1	0.5	07/19/21 15:18	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	1.3		*	%	0.1	0.5	07/19/21 15:18	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.4	B	*	%	0.1	0.5	07/19/21 15:18	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.225		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.6		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	7.8		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	99.7		*	%	0.1	0.5	07/03/21 19:37	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.09	B	*	%	0.01	0.1	07/19/21 14:12	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 12:53	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 11:42	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 11:42	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:31	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 13:00	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 13:00	jpb
Synthetic Precip. Leaching Procedure	M1312								07/12/21 21:01	gkh/zln

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: D1-2

ACZ Sample ID: **L66732-10**

Date Sampled: 06/16/21 08:23

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/14/21 8:45	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/14/21 14:05	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.336		*	mg/L	0.05	0.25	07/15/21 23:44	jlw
Aluminum, total (3050)	M6010D ICP	100	5210		*	mg/Kg	5	25	07/18/21 23:29	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/15/21 15:55	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.262	B	*	mg/Kg	0.2	1	07/15/21 16:17	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00148		*	mg/L	0.0002	0.001	07/15/21 15:55	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	3.48		*	mg/Kg	0.1	0.5	07/15/21 16:17	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/15/21 15:55	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.451			mg/Kg	0.025	0.125	07/15/21 16:17	mfm
Calcium (1312)	M6010D ICP	1	9.34			mg/L	0.1	0.5	07/15/21 12:27	jlw
Calcium, total (3050)	M6010D ICP	100	25800		*	mg/Kg	10	50	07/16/21 4:37	jlw
Copper (1312)	M6020B ICP-MS	1	0.0281			mg/L	0.0008	0.002	07/15/21 15:55	bsu
Copper, total (3050)	M6020B ICP-MS	500	362		*	mg/Kg	0.4	1	07/15/21 16:17	mfm
Iron (1312)	M6010D ICP	1	0.194		*	mg/L	0.06	0.15	07/15/21 12:27	jlw
Iron, total (3050)	M6010D ICP	100	11300		*	mg/Kg	6	15	07/20/21 3:31	kja
Lead (1312)	M6020B ICP-MS	1	0.00063		*	mg/L	0.0001	0.0005	07/15/21 15:55	bsu
Lead, total (3050)	M6020B ICP-MS	500	7.93		*	mg/Kg	0.05	0.25	07/15/21 16:17	mfm
Magnesium (1312)	M6010D ICP	1	0.26	B	*	mg/L	0.2	1	07/15/21 12:27	jlw
Magnesium, total (3050)	M6010D ICP	100	3000		*	mg/Kg	20	100	07/16/21 4:37	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/15/21 12:27	jlw
Manganese, total (3050)	M6010D ICP	100	453			mg/Kg	1	5	07/16/21 4:37	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:46	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	7.25	B	*	ng/g	1.52	7.6	07/07/21 17:42	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/15/21 12:27	jlw
Molybdenum, total (3050)	M6010D ICP	100	6.38	B		mg/Kg	2	10	07/16/21 4:37	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00055	B	*	mg/L	0.0004	0.001	07/15/21 15:55	bsu
Nickel, total (3050)	M6020B ICP-MS	500	2.74			mg/Kg	0.2	0.5	07/15/21 16:17	mfm
Selenium (1312)	M6020B ICP-MS	1	0.00020	B	*	mg/L	0.0001	0.00025	07/15/21 15:55	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.261		*	mg/Kg	0.05	0.125	07/15/21 16:17	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/15/21 15:55	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.114	B		mg/Kg	0.05	0.25	07/15/21 16:17	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/15/21 12:27	jlw
Zinc, total (3050)	M6010D ICP	100	70.1		*	mg/Kg	2	5	07/16/21 4:37	jlw

**Hudbay Minerals**

Project ID:

Sample ID: D1-2

ACZ Sample ID: **L66732-10**

Date Sampled: 06/16/21 08:23

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.7		*	%	0.1	0.5	07/19/21 15:31	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	1.2		*	%	0.1	0.5	07/19/21 15:31	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	07/19/21 15:31	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.163		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.8		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	8.0		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	99.8		*	%	0.1	0.5	07/03/21 23:00	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.04	B	*	%	0.01	0.1	07/19/21 14:18	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 12:56	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 12:02	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 12:02	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:33	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 13:03	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 13:03	jpb
Synthetic Precip. Leaching Procedure	M1312								07/12/21 21:55	gkh/zln

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: D1-3

ACZ Sample ID: **L66732-11**

Date Sampled: 06/16/21 10:01

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/14/21 8:45	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/14/21 14:24	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.526		*	mg/L	0.05	0.25	07/15/21 23:48	jlw
Aluminum, total (3050)	M6010D ICP	100	2640		*	mg/Kg	5	25	07/18/21 23:33	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/15/21 15:56	bsu
Antimony, total (3050)	M6020B ICP-MS	500	<0.2	U	*	mg/Kg	0.2	1	07/15/21 16:19	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00105		*	mg/L	0.0002	0.001	07/15/21 15:56	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	1.85		*	mg/Kg	0.1	0.5	07/15/21 16:19	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/15/21 15:56	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.190			mg/Kg	0.025	0.125	07/15/21 16:19	mfm
Calcium (1312)	M6010D ICP	1	8.35			mg/L	0.1	0.5	07/15/21 12:31	jlw
Calcium, total (3050)	M6010D ICP	100	27100		*	mg/Kg	10	50	07/16/21 4:41	jlw
Copper (1312)	M6020B ICP-MS	1	0.0370			mg/L	0.0008	0.002	07/15/21 15:56	bsu
Copper, total (3050)	M6020B ICP-MS	500	99.8		*	mg/Kg	0.4	1	07/15/21 16:19	mfm
Iron (1312)	M6010D ICP	1	0.286		*	mg/L	0.06	0.15	07/15/21 12:31	jlw
Iron, total (3050)	M6010D ICP	100	4810		*	mg/Kg	6	15	07/20/21 3:35	kja
Lead (1312)	M6020B ICP-MS	1	0.00101		*	mg/L	0.0001	0.0005	07/15/21 15:56	bsu
Lead, total (3050)	M6020B ICP-MS	500	5.13		*	mg/Kg	0.05	0.25	07/15/21 16:19	mfm
Magnesium (1312)	M6010D ICP	1	0.45	B	*	mg/L	0.2	1	07/15/21 12:31	jlw
Magnesium, total (3050)	M6010D ICP	100	1440		*	mg/Kg	20	100	07/16/21 4:41	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/15/21 12:31	jlw
Manganese, total (3050)	M6010D ICP	100	143			mg/Kg	1	5	07/16/21 4:41	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:47	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	5.26	B	*	ng/g	1.46	7.3	07/07/21 17:50	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/15/21 12:31	jlw
Molybdenum, total (3050)	M6010D ICP	100	3.88	B		mg/Kg	2	10	07/16/21 4:41	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	07/15/21 15:56	bsu
Nickel, total (3050)	M6020B ICP-MS	500	1.24			mg/Kg	0.2	0.5	07/15/21 16:19	mfm
Selenium (1312)	M6020B ICP-MS	1	0.00015	B	*	mg/L	0.0001	0.00025	07/15/21 15:56	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.143		*	mg/Kg	0.05	0.125	07/15/21 16:19	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/15/21 15:56	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.0523	B		mg/Kg	0.05	0.25	07/15/21 16:19	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/15/21 12:31	jlw
Zinc, total (3050)	M6010D ICP	100	21.6		*	mg/Kg	2	5	07/16/21 4:41	jlw

**Hudbay Minerals**

Project ID:

Sample ID: D1-3

ACZ Sample ID: **L66732-11**

Date Sampled: 06/16/21 10:01

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.5		*	%	0.1	0.5	07/19/21 15:44	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.9		*	%	0.1	0.5	07/19/21 15:44	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	07/19/21 15:44	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.288		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.6		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	7.4		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	99.9		*	%	0.1	0.5	07/04/21 2:23	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.02	B	*	%	0.01	0.1	07/19/21 14:24	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 12:58	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 12:22	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 12:22	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:35	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 13:07	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 13:07	jpb
Synthetic Precip. Leaching Procedure	M1312								07/12/21 22:49	gkh/zln

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: D1-4

ACZ Sample ID: **L66732-12**

Date Sampled: 06/16/21 11:10

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/14/21 8:45	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/14/21 14:42	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.409		*	mg/L	0.05	0.25	07/15/21 23:51	jlw
Aluminum, total (3050)	M6010D ICP	100	3960		*	mg/Kg	5	25	07/18/21 23:37	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/15/21 15:58	bsu
Antimony, total (3050)	M6020B ICP-MS	500	<0.2	U	*	mg/Kg	0.2	1	07/15/21 16:21	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00112		*	mg/L	0.0002	0.001	07/15/21 15:58	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	2.63		*	mg/Kg	0.1	0.5	07/15/21 16:21	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/15/21 15:58	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.263			mg/Kg	0.025	0.125	07/15/21 16:21	mfm
Calcium (1312)	M6010D ICP	1	10.5			mg/L	0.1	0.5	07/15/21 12:35	jlw
Calcium, total (3050)	M6010D ICP	100	14000		*	mg/Kg	10	50	07/16/21 4:44	jlw
Copper (1312)	M6020B ICP-MS	1	0.0449			mg/L	0.0008	0.002	07/15/21 15:58	bsu
Copper, total (3050)	M6020B ICP-MS	500	218		*	mg/Kg	0.4	1	07/15/21 16:21	mfm
Iron (1312)	M6010D ICP	1	0.301		*	mg/L	0.06	0.15	07/15/21 12:35	jlw
Iron, total (3050)	M6010D ICP	100	6780		*	mg/Kg	6	15	07/20/21 3:39	kja
Lead (1312)	M6020B ICP-MS	1	0.00080		*	mg/L	0.0001	0.0005	07/15/21 15:58	bsu
Lead, total (3050)	M6020B ICP-MS	500	5.62		*	mg/Kg	0.05	0.25	07/15/21 16:21	mfm
Magnesium (1312)	M6010D ICP	1	0.59	B	*	mg/L	0.2	1	07/15/21 12:35	jlw
Magnesium, total (3050)	M6010D ICP	100	2410		*	mg/Kg	20	100	07/16/21 4:44	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/15/21 12:35	jlw
Manganese, total (3050)	M6010D ICP	100	175			mg/Kg	1	5	07/16/21 4:44	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:48	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	8.82		*	ng/g	1.48	7.4	07/07/21 17:59	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/15/21 12:35	jlw
Molybdenum, total (3050)	M6010D ICP	100	5.79	B		mg/Kg	2	10	07/16/21 4:44	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	07/15/21 15:58	bsu
Nickel, total (3050)	M6020B ICP-MS	500	1.64			mg/Kg	0.2	0.5	07/15/21 16:21	mfm
Selenium (1312)	M6020B ICP-MS	1	0.00015	B	*	mg/L	0.0001	0.00025	07/15/21 15:58	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.286		*	mg/Kg	0.05	0.125	07/15/21 16:21	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/15/21 15:58	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.0690	B		mg/Kg	0.05	0.25	07/15/21 16:21	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/15/21 12:35	jlw
Zinc, total (3050)	M6010D ICP	100	43.1		*	mg/Kg	2	5	07/16/21 4:44	jlw

**Hudbay Minerals**

Project ID:

Sample ID: D1-4

ACZ Sample ID: **L66732-12**

Date Sampled: 06/16/21 11:10

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.8		*	%	0.1	0.5	07/19/21 15:56	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	1.2		*	%	0.1	0.5	07/19/21 15:56	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	07/19/21 15:56	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.408		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.8		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	7.5		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	99.9		*	%	0.1	0.5	07/04/21 5:46	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.03	B	*	%	0.01	0.1	07/19/21 14:30	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 13:01	zln
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 12:42	mep
Digestion - Hot Plate	M3050B ICP								07/14/21 12:42	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:36	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 13:11	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 13:11	jpb
Synthetic Precip. Leaching Procedure	M1312								07/12/21 23:43	gkh/zln

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: D1-5

ACZ Sample ID: **L66732-13**

Date Sampled: 06/16/21 11:58

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/14/21 8:45	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/14/21 15:00	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.365		*	mg/L	0.05	0.25	07/15/21 23:55	jlw
Aluminum, total (3050)	M6010D ICP	100	4350		*	mg/Kg	5	25	07/18/21 23:40	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/15/21 16:00	bsu
Antimony, total (3050)	M6020B ICP-MS	500	<0.2	U	*	mg/Kg	0.2	1	07/15/21 16:23	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00124		*	mg/L	0.0002	0.001	07/15/21 16:00	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	2.21		*	mg/Kg	0.1	0.5	07/15/21 16:23	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/15/21 16:00	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.475			mg/Kg	0.025	0.125	07/15/21 16:23	mfm
Calcium (1312)	M6010D ICP	1	9.61			mg/L	0.1	0.5	07/15/21 12:39	jlw
Calcium, total (3050)	M6010D ICP	100	33000		*	mg/Kg	10	50	07/16/21 4:48	jlw
Copper (1312)	M6020B ICP-MS	1	0.0468			mg/L	0.0008	0.002	07/15/21 16:00	bsu
Copper, total (3050)	M6020B ICP-MS	500	456		*	mg/Kg	0.4	1	07/15/21 16:23	mfm
Iron (1312)	M6010D ICP	1	0.202		*	mg/L	0.06	0.15	07/15/21 12:39	jlw
Iron, total (3050)	M6010D ICP	100	8430		*	mg/Kg	6	15	07/20/21 3:42	kja
Lead (1312)	M6020B ICP-MS	1	0.00076		*	mg/L	0.0001	0.0005	07/15/21 16:00	bsu
Lead, total (3050)	M6020B ICP-MS	500	8.85		*	mg/Kg	0.05	0.25	07/15/21 16:23	mfm
Magnesium (1312)	M6010D ICP	1	0.42	B	*	mg/L	0.2	1	07/15/21 12:39	jlw
Magnesium, total (3050)	M6010D ICP	100	2910		*	mg/Kg	20	100	07/16/21 4:48	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/15/21 12:39	jlw
Manganese, total (3050)	M6010D ICP	100	509			mg/Kg	1	5	07/16/21 4:48	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:49	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	9.63		*	ng/g	1.52	7.6	07/07/21 18:08	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/15/21 12:39	jlw
Molybdenum, total (3050)	M6010D ICP	100	3.71	B		mg/Kg	2	10	07/16/21 4:48	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	07/15/21 16:00	bsu
Nickel, total (3050)	M6020B ICP-MS	500	2.62			mg/Kg	0.2	0.5	07/15/21 16:23	mfm
Selenium (1312)	M6020B ICP-MS	1	0.00017	B	*	mg/L	0.0001	0.00025	07/15/21 16:00	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.249		*	mg/Kg	0.05	0.125	07/15/21 16:23	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/15/21 16:00	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.0686	B		mg/Kg	0.05	0.25	07/15/21 16:23	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/15/21 12:39	jlw
Zinc, total (3050)	M6010D ICP	100	120		*	mg/Kg	2	5	07/16/21 4:48	jlw

**Hudbay Minerals**

Project ID:

Sample ID: D1-5

ACZ Sample ID: **L66732-13**

Date Sampled: 06/16/21 11:58

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.7		*	%	0.1	0.5	07/19/21 16:09	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	1.2		*	%	0.1	0.5	07/19/21 16:09	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	07/19/21 16:09	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.220		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.9		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	7.7		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	99.9		*	%	0.1	0.5	07/04/21 9:09	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.02	B	*	%	0.01	0.1	07/19/21 14:36	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 13:04	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 13:01	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 13:01	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:38	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 13:15	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 13:15	jpb
Synthetic Precip. Leaching Procedure	M1312								07/13/21 0:37	gkh/zln

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: D1-6

ACZ Sample ID: **L66732-14**

Date Sampled: 06/17/21 08:33

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/14/21 8:45	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/14/21 15:19	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.373		*	mg/L	0.05	0.25	07/15/21 23:59	jlw
Aluminum, total (3050)	M6010D ICP	100	3840		*	mg/Kg	5	25	07/18/21 23:44	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/15/21 16:02	bsu
Antimony, total (3050)	M6020B ICP-MS	500	<0.2	U	*	mg/Kg	0.2	1	07/15/21 16:24	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00124		*	mg/L	0.0002	0.001	07/15/21 16:02	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	2.21		*	mg/Kg	0.1	0.5	07/15/21 16:24	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/15/21 16:02	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.361			mg/Kg	0.025	0.125	07/15/21 16:24	mfm
Calcium (1312)	M6010D ICP	1	9.32			mg/L	0.1	0.5	07/15/21 12:42	jlw
Calcium, total (3050)	M6010D ICP	100	13200		*	mg/Kg	10	50	07/16/21 4:52	jlw
Copper (1312)	M6020B ICP-MS	1	0.0523			mg/L	0.0008	0.002	07/15/21 16:02	bsu
Copper, total (3050)	M6020B ICP-MS	500	391		*	mg/Kg	0.4	1	07/15/21 16:24	mfm
Iron (1312)	M6010D ICP	1	0.258		*	mg/L	0.06	0.15	07/15/21 12:42	jlw
Iron, total (3050)	M6010D ICP	100	8690		*	mg/Kg	6	15	07/20/21 3:46	kja
Lead (1312)	M6020B ICP-MS	1	0.00072		*	mg/L	0.0001	0.0005	07/15/21 16:02	bsu
Lead, total (3050)	M6020B ICP-MS	500	6.71		*	mg/Kg	0.05	0.25	07/15/21 16:24	mfm
Magnesium (1312)	M6010D ICP	1	0.49	B	*	mg/L	0.2	1	07/15/21 12:42	jlw
Magnesium, total (3050)	M6010D ICP	100	2280		*	mg/Kg	20	100	07/16/21 4:52	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/15/21 12:42	jlw
Manganese, total (3050)	M6010D ICP	100	282			mg/Kg	1	5	07/16/21 4:52	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:49	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	10.8		*	ng/g	1.35	6.75	07/07/21 18:16	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/15/21 12:42	jlw
Molybdenum, total (3050)	M6010D ICP	100	3.83	B		mg/Kg	2	10	07/16/21 4:52	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	07/15/21 16:02	bsu
Nickel, total (3050)	M6020B ICP-MS	500	2.06			mg/Kg	0.2	0.5	07/15/21 16:24	mfm
Selenium (1312)	M6020B ICP-MS	1	0.00015	B	*	mg/L	0.0001	0.00025	07/15/21 16:02	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.285		*	mg/Kg	0.05	0.125	07/15/21 16:24	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/15/21 16:02	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.0589	B		mg/Kg	0.05	0.25	07/15/21 16:24	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/15/21 12:42	jlw
Zinc, total (3050)	M6010D ICP	100	57.8		*	mg/Kg	2	5	07/16/21 4:52	jlw

**Hudbay Minerals**

Project ID:

Sample ID: D1-6

ACZ Sample ID: **L66732-14**

Date Sampled: 06/17/21 08:33

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.7		*	%	0.1	0.5	07/19/21 16:22	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	1.1		*	%	0.1	0.5	07/19/21 16:22	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	07/19/21 16:22	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.328		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.9		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	7.8		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	99.8		*	%	0.1	0.5	07/04/21 12:32	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.03	B	*	%	0.01	0.1	07/19/21 14:42	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 13:07	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 13:21	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 13:21	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:40	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 13:18	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 13:18	jpb
Synthetic Precip. Leaching Procedure	M1312								07/13/21 1:31	gkh/zln

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: D1-7

ACZ Sample ID: **L66732-15**

Date Sampled: 06/17/21 09:35

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/14/21 8:45	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/14/21 15:37	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.429		*	mg/L	0.05	0.25	07/16/21 0:03	jlw
Aluminum, total (3050)	M6010D ICP	100	3380		*	mg/Kg	5	25	07/18/21 23:55	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/15/21 16:07	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.200	B	*	mg/Kg	0.2	1	07/15/21 16:26	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00099	B	*	mg/L	0.0002	0.001	07/15/21 16:07	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	2.70		*	mg/Kg	0.1	0.5	07/15/21 16:26	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/15/21 16:07	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.275			mg/Kg	0.025	0.125	07/15/21 16:26	mfm
Calcium (1312)	M6010D ICP	1	9.27			mg/L	0.1	0.5	07/15/21 12:46	jlw
Calcium, total (3050)	M6010D ICP	100	14000		*	mg/Kg	10	50	07/18/21 23:55	kja
Copper (1312)	M6020B ICP-MS	1	0.0435			mg/L	0.0008	0.002	07/15/21 16:07	bsu
Copper, total (3050)	M6020B ICP-MS	500	250		*	mg/Kg	0.4	1	07/15/21 16:26	mfm
Iron (1312)	M6010D ICP	1	0.204		*	mg/L	0.06	0.15	07/15/21 12:46	jlw
Iron, total (3050)	M6010D ICP	100	8650		*	mg/Kg	6	15	07/20/21 3:50	kja
Lead (1312)	M6020B ICP-MS	1	0.00040	B	*	mg/L	0.0001	0.0005	07/15/21 16:07	bsu
Lead, total (3050)	M6020B ICP-MS	500	5.39		*	mg/Kg	0.05	0.25	07/15/21 16:26	mfm
Magnesium (1312)	M6010D ICP	1	0.36	B	*	mg/L	0.2	1	07/15/21 12:46	jlw
Magnesium, total (3050)	M6010D ICP	100	1600			mg/Kg	20	100	07/18/21 23:55	kja
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/15/21 12:46	jlw
Manganese, total (3050)	M6010D ICP	100	385			mg/Kg	1	5	07/18/21 23:55	kja
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:50	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	5.46	B	*	ng/g	1.43	7.15	07/07/21 18:25	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/15/21 12:46	jlw
Molybdenum, total (3050)	M6010D ICP	100	2.61	B		mg/Kg	2	10	07/18/21 23:55	kja
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	07/15/21 16:07	bsu
Nickel, total (3050)	M6020B ICP-MS	500	2.05			mg/Kg	0.2	0.5	07/15/21 16:26	mfm
Selenium (1312)	M6020B ICP-MS	1	0.00018	B	*	mg/L	0.0001	0.00025	07/15/21 16:07	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.179		*	mg/Kg	0.05	0.125	07/15/21 16:26	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/15/21 16:07	bsu
Thallium, total (3050)	M6020B ICP-MS	500	<0.05	U		mg/Kg	0.05	0.25	07/15/21 16:26	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/15/21 12:46	jlw
Zinc, total (3050)	M6010D ICP	100	44.3		*	mg/Kg	2	5	07/18/21 23:55	kja

**Hudbay Minerals**

Project ID:

Sample ID: D1-7

ACZ Sample ID: **L66732-15**

Date Sampled: 06/17/21 09:35

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.4		*	%	0.1	0.5	07/19/21 16:34	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	1.6		*	%	0.1	0.5	07/19/21 16:34	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	07/19/21 16:34	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.340		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	24.0		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	7.7		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	99.8		*	%	0.1	0.5	07/04/21 15:55	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.02	B	*	%	0.01	0.1	07/19/21 14:48	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 13:09	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 13:41	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 13:41	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:41	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 13:22	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 13:22	jpb
Synthetic Precip. Leaching Procedure	M1312								07/13/21 2:25	gkh/zln

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: D1-8

ACZ Sample ID: **L66732-16**

Date Sampled: 06/17/21 10:26

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/14/21 8:45	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/14/21 15:55	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.515		*	mg/L	0.05	0.25	07/16/21 0:07	jlw
Aluminum, total (3050)	M6010D ICP	101	4200		*	mg/Kg	5.05	25.3	07/18/21 23:59	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/15/21 16:09	bsu
Antimony, total (3050)	M6020B ICP-MS	505	1.82		*	mg/Kg	0.202	1.01	07/15/21 16:28	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00096	B	*	mg/L	0.0002	0.001	07/15/21 16:09	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	2.48		*	mg/Kg	0.101	0.505	07/15/21 16:28	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/15/21 16:09	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	0.336			mg/Kg	0.0253	0.126	07/15/21 16:28	mfm
Calcium (1312)	M6010D ICP	1	9.17			mg/L	0.1	0.5	07/15/21 12:51	jlw
Calcium, total (3050)	M6010D ICP	101	17000		*	mg/Kg	10.1	50.5	07/18/21 23:59	kja
Copper (1312)	M6020B ICP-MS	1	0.0552			mg/L	0.0008	0.002	07/15/21 16:09	bsu
Copper, total (3050)	M6020B ICP-MS	505	278		*	mg/Kg	0.404	1.01	07/15/21 16:28	mfm
Iron (1312)	M6010D ICP	1	0.380		*	mg/L	0.06	0.15	07/15/21 12:51	jlw
Iron, total (3050)	M6010D ICP	101	16000		*	mg/Kg	6.06	15.2	07/20/21 4:05	kja
Lead (1312)	M6020B ICP-MS	1	0.00110		*	mg/L	0.0001	0.0005	07/15/21 16:09	bsu
Lead, total (3050)	M6020B ICP-MS	505	7.87		*	mg/Kg	0.0505	0.253	07/15/21 16:28	mfm
Magnesium (1312)	M6010D ICP	1	0.42	B	*	mg/L	0.2	1	07/15/21 12:51	jlw
Magnesium, total (3050)	M6010D ICP	101	2130			mg/Kg	20.2	101	07/18/21 23:59	kja
Manganese (1312)	M6010D ICP	1	0.014	B	*	mg/L	0.01	0.05	07/15/21 12:51	jlw
Manganese, total (3050)	M6010D ICP	101	337			mg/Kg	1.01	5.05	07/18/21 23:59	kja
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:51	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	5.69	B	*	ng/g	1.48	7.4	07/07/21 18:34	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/15/21 12:51	jlw
Molybdenum, total (3050)	M6010D ICP	101	3.25	B		mg/Kg	2.02	10.1	07/18/21 23:59	kja
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	07/15/21 16:09	bsu
Nickel, total (3050)	M6020B ICP-MS	505	2.25			mg/Kg	0.202	0.505	07/15/21 16:28	mfm
Selenium (1312)	M6020B ICP-MS	1	0.00013	B	*	mg/L	0.0001	0.00025	07/15/21 16:09	bsu
Selenium, total (3050)	M6020B ICP-MS	505	0.218		*	mg/Kg	0.0505	0.126	07/15/21 16:28	mfm
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/15/21 16:09	bsu
Thallium, total (3050)	M6020B ICP-MS	505	0.0605	B		mg/Kg	0.0505	0.253	07/15/21 16:28	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/15/21 12:51	jlw
Zinc, total (3050)	M6010D ICP	101	58.7		*	mg/Kg	2.02	5.05	07/18/21 23:59	kja

**Hudbay Minerals**

Project ID:

Sample ID: D1-8

ACZ Sample ID: **L66732-16**

Date Sampled: 06/17/21 10:26

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	2.0		*	%	0.1	0.5	07/19/21 16:47	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	1.5		*	%	0.1	0.5	07/19/21 16:47	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	07/19/21 16:47	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.365		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	24.1		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	7.6		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	99.9		*	%	0.1	0.5	07/04/21 19:18	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.02	B	*	%	0.01	0.1	07/19/21 14:54	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 13:12	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 14:01	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 14:01	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:43	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 13:26	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 13:26	jpb
Synthetic Precip. Leaching Procedure	M1312								07/13/21 3:19	gkh/zln

**Arizona license number: AZ0102**

**Hudbay Minerals**

Project ID:

Sample ID: D1-9

ACZ Sample ID: **L66732-17**

Date Sampled: 06/17/21 10:57

Date Received: 06/24/21

Sample Matrix: Soil

**Inorganic Prep**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								07/14/21 8:45	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								07/14/21 16:13	jlw

**Metals Analysis**

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.230	B	*	mg/L	0.05	0.25	07/16/21 0:10	jlw
Aluminum, total (3050)	M6010D ICP	500	1840		*	mg/Kg	25	125	07/19/21 0:03	kja
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	07/15/21 16:11	bsu
Antimony, total (3050)	M6020B ICP-MS	500	<0.2	U	*	mg/Kg	0.2	1	07/15/21 16:33	mfm
Arsenic (1312)	M6020B ICP-MS	1	0.00041	B	*	mg/L	0.0002	0.001	07/15/21 16:11	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	1.47		*	mg/Kg	0.1	0.5	07/15/21 16:33	mfm
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	07/15/21 16:11	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.252			mg/Kg	0.025	0.125	07/15/21 16:33	mfm
Calcium (1312)	M6010D ICP	1	7.75			mg/L	0.1	0.5	07/15/21 12:55	jlw
Calcium, total (3050)	M6010D ICP	500	207000		*	mg/Kg	50	250	07/19/21 0:03	kja
Copper (1312)	M6020B ICP-MS	1	0.01000			mg/L	0.0008	0.002	07/15/21 16:11	bsu
Copper, total (3050)	M6020B ICP-MS	500	56.9		*	mg/Kg	0.4	1	07/15/21 16:33	mfm
Iron (1312)	M6010D ICP	1	<0.06	U	*	mg/L	0.06	0.15	07/15/21 12:55	jlw
Iron, total (3050)	M6010D ICP	100	4650		*	mg/Kg	6	15	07/20/21 4:09	kja
Lead (1312)	M6020B ICP-MS	1	0.00012	B	*	mg/L	0.0001	0.0005	07/15/21 16:11	bsu
Lead, total (3050)	M6020B ICP-MS	500	9.71		*	mg/Kg	0.05	0.25	07/15/21 16:33	mfm
Magnesium (1312)	M6010D ICP	1	0.23	B	*	mg/L	0.2	1	07/15/21 12:55	jlw
Magnesium, total (3050)	M6010D ICP	500	2220			mg/Kg	100	500	07/19/21 0:03	kja
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	07/15/21 12:55	jlw
Manganese, total (3050)	M6010D ICP	500	208			mg/Kg	5	25	07/19/21 0:03	kja
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	07/14/21 14:54	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	2.75	B	*	ng/g	1.54	7.7	07/07/21 18:43	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	07/15/21 12:55	jlw
Molybdenum, total (3050)	M6010D ICP	500	<10	U		mg/Kg	10	50	07/19/21 0:03	kja
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	07/15/21 16:11	bsu
Nickel, total (3050)	M6020B ICP-MS	500	1.20			mg/Kg	0.2	0.5	07/15/21 16:33	mfm
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	07/15/21 16:11	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.0801	B	*	mg/Kg	0.05	0.125	07/20/21 20:05	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	07/15/21 16:11	bsu
Thallium, total (3050)	M6020B ICP-MS	500	<0.05	U		mg/Kg	0.05	0.25	07/15/21 16:33	mfm
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	07/15/21 12:55	jlw
Zinc, total (3050)	M6010D ICP	500	49.5		*	mg/Kg	10	25	07/19/21 0:03	kja

**Hudbay Minerals**

Project ID:

Sample ID: D1-9

ACZ Sample ID: **L66732-17**

Date Sampled: 06/17/21 10:57

Date Received: 06/24/21

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	8.6		*	%	0.1	0.5	07/19/21 17:00	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	8.5		*	%	0.1	0.5	07/19/21 17:00	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.1	B	*	%	0.1	0.5	07/19/21 17:00	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.173		*	mmhos/cm	0.001	0.01	07/20/21 0:00	jms
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
Temperature		1	23.8		*	C	0.1	0.1	07/20/21 0:00	jms
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			07/20/21 0:00	jms
pH		1	8.1		*	units	0.1	0.1	07/20/21 0:00	jms
Solids, Percent	D2216-80	1	100.0		*	%	0.1	0.5	07/04/21 22:41	ksf
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	<0.01	U	*	%	0.01	0.1	07/19/21 15:00	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				07/06/21 13:15	zln
Digestion - Hot Plate	M3050B ICP								07/14/21 14:21	mep
Digestion - Hot Plate	M3050B ICP-MS								07/14/21 14:21	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				07/19/21 17:45	jms
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				07/13/21 13:30	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				07/13/21 13:30	jpb
Synthetic Precip. Leaching Procedure	M1312								07/13/21 4:13	gkh/zln

**Arizona license number: AZ0102**



## Report Header Explanations

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

## QC Sample Types

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

## QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

## ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

## Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (4) EPA SW-846. Test Methods for Evaluating Solid Waste.
- (5) Standard Methods for the Examination of Water and Wastewater.

## Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
- (4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
- (5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:

<https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf>

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Aluminum (1312)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523072</b>													
WG523072ICV	ICV	07/13/21 10:56	II210712-1	2		1.959	mg/L	98	90	110			
WG523072ICB	ICB	07/13/21 11:00				U	mg/L		-0.15	0.15			
WG522653PBS	PBS	07/13/21 11:24				.1	mg/L		-0.15	0.15			
WG522653LFB1	LFB	07/13/21 11:28	II210708-3	1.0008		1.048	mg/L	105	80	120			
L66691-11MS	MS	07/13/21 11:36	II210708-3	1.0008	.65	1.629	mg/L	98	75	125			
L66691-11MSD	MSD	07/13/21 11:40	II210708-3	1.0008	.65	1.642	mg/L	99	75	125	1	20	
L66691-14DUP	DUP	07/13/21 11:55			.755	.898	mg/L				17	20	
<b>WG523103</b>													
WG523103ICV	ICV	07/13/21 21:33	II210712-1	2		1.889	mg/L	94	90	110			
WG523103ICB	ICB	07/13/21 21:36				U	mg/L		-0.15	0.15			
WG522746PBS	PBS	07/13/21 22:00				U	mg/L		-0.15	0.15			
WG522746LFB1	LFB	07/13/21 22:04	II210708-3	1.0008		.952	mg/L	95	80	120			
L66693-04DUP	DUP	07/13/21 22:11			.546	.495	mg/L				10	20	
L66693-05MS	MS	07/13/21 22:19	II210708-3	1.0008	.307	1.309	mg/L	100	75	125			
L66693-05MSD	MSD	07/13/21 22:22	II210708-3	1.0008	.307	1.327	mg/L	102	75	125	1	20	
<b>WG523320</b>													
WG523320ICV	ICV	07/15/21 22:25	II210712-1	2		1.917	mg/L	96	90	110			
WG523320ICB	ICB	07/15/21 22:28				U	mg/L		-0.15	0.15			
WG522974PBS	PBS	07/15/21 22:52				U	mg/L		-0.15	0.15			
WG522974LFB1	LFB	07/15/21 22:55	II210708-3	1.0008		1.025	mg/L	102	80	120			
L66693-01MS	MS	07/15/21 23:03	II210708-3	1.0008	.651	1.762	mg/L	111	75	125			
L66693-01MSD	MSD	07/15/21 23:06	II210708-3	1.0008	.651	1.739	mg/L	109	75	125	1	20	
L66732-17DUP	DUP	07/16/21 0:21			.23	.217	mg/L				6	20	RA

**Aluminum, total (3050)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523453</b>													
WG523453ICV	ICV	07/18/21 21:59	II210712-1	2		1.922	mg/L	96	90	110			
WG523453ICB	ICB	07/18/21 22:03				U	mg/L		-0.15	0.15			
WG523131PBS	PBS	07/18/21 22:26				U	mg/Kg		-15	15			
WG523131LCSS	LCSS	07/18/21 22:30	PCN63584	8130		8062	mg/Kg		3920	12300			
WG523131LCSSD	LCSSD	07/18/21 22:34	PCN63584	8130		8627	mg/Kg		3920	12300	7	20	
L66732-07MS	MS	07/18/21 23:11	II210708-3	100.08	5230	8077	mg/Kg	2845	75	125			M3
L66732-07MSD	MSD	07/18/21 23:14	II210708-3	100.08	5230	7651	mg/Kg	2419	75	125	5	20	M3

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Antimony (1312)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523021</b>													
WG523021ICV	ICV	07/12/21 20:00	MS210630-2	.0201		.01991	mg/L	99	90	110			
WG523021ICB	ICB	07/12/21 20:01				U	mg/L		-0.0012	0.0012			
WG522653PBS	PBS	07/12/21 20:11				U	mg/L		-0.0012	0.0012			
WG522653LFB2	LFB	07/12/21 20:13	MS210702-2	.01		.01021	mg/L	102	80	120			
L66691-12MS	MS	07/12/21 20:18	MS210702-2	.01	U	.01022	mg/L	102	75	125			
L66691-12MSD	MSD	07/12/21 20:20	MS210702-2	.01	U	.01019	mg/L	102	75	125	0	20	
L66691-14DUP	DUP	07/12/21 20:29			U	U	mg/L				0	20	RA

**WG523066**

WG523066ICV	ICV	07/13/21 14:56	MS210630-2	.0201		.0201	mg/L	100	90	110			
WG523066ICB	ICB	07/13/21 14:58				U	mg/L		-0.0012	0.0012			
WG522746PBS	PBS	07/13/21 15:09				U	mg/L		-0.0012	0.0012			
WG522746LFB2	LFB	07/13/21 15:11	MS210702-2	.01		.00958	mg/L	96	80	120			
L66693-04DUP	DUP	07/13/21 15:14			U	U	mg/L				0	20	RA
L66731-09MS	MS	07/13/21 15:20	MS210702-2	.01	U	.00982	mg/L	98	75	125			
L66731-09MSD	MSD	07/13/21 15:25	MS210702-2	.01	U	.00974	mg/L	97	75	125	1	20	

**WG523321**

WG523321ICV	ICV	07/15/21 15:18	MS210630-2	.0201		.02031	mg/L	101	90	110			
WG523321ICB	ICB	07/15/21 15:20				U	mg/L		-0.0012	0.0012			
WG522974PBS	PBS	07/15/21 15:29				U	mg/L		-0.0012	0.0012			
WG522974LFB2	LFB	07/15/21 15:31	MS210702-2	.01		.00961	mg/L	96	80	120			
L66693-02MS	MS	07/15/21 15:36	MS210702-2	.01	U	.00964	mg/L	96	75	125			
L66693-02MSD	MSD	07/15/21 15:38	MS210702-2	.01	U	.00964	mg/L	96	75	125	0	20	
L66732-17DUP	DUP	07/15/21 16:13			U	U	mg/L				0	20	RA

**Antimony, total (3050)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523339</b>													
WG523339ICV	ICV	07/15/21 15:38	MS210630-2	.0201		.0193	mg/L	96	90	110			
WG523339ICB	ICB	07/15/21 15:40				U	mg/L		-0.0012	0.0012			
WG523131PBS	PBS	07/15/21 15:50				U	mg/Kg		-0.6	0.6			
WG523131LCSS	LCSS	07/15/21 15:52	PCN63584	134		90.11923	mg/Kg		4.56	264			
WG523131LCSSD	LCSSD	07/15/21 15:54	PCN63584	134		91.86161	mg/Kg		4.56	264	2	20	
L66732-17MS	MS	07/15/21 16:35	MS210521-6	5	U	1.11614	mg/Kg	22	75	125			M2
L66732-17MSD	MSD	07/15/21 16:37	MS210521-6	5	U	1.41977	mg/Kg	28	75	125	24	20	M2 RD

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Arsenic (1312)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523021</b>													
WG523021ICV	ICV	07/12/21 20:00	MS210630-2	.05		.04937	mg/L	99	90	110			
WG523021ICB	ICB	07/12/21 20:01				U	mg/L		-0.0006	0.0006			
WG522653PBS	PBS	07/12/21 20:11				U	mg/L		-0.0006	0.0006			
WG522653LFB2	LFB	07/12/21 20:13	MS210702-2	.05005		.05085	mg/L	102	80	120			
L66691-12MS	MS	07/12/21 20:18	MS210702-2	.05005	.00046	.0509	mg/L	101	75	125			
L66691-12MSD	MSD	07/12/21 20:20	MS210702-2	.05005	.00046	.0521	mg/L	103	75	125	2	20	
L66691-14DUP	DUP	07/12/21 20:29			.00052	.00046	mg/L				12	20	RA

**WG523066**

WG523066ICV	ICV	07/13/21 14:56	MS210630-2	.05		.04995	mg/L	100	90	110			
WG523066ICB	ICB	07/13/21 14:58				U	mg/L		-0.0006	0.0006			
WG522746PBS	PBS	07/13/21 15:09				U	mg/L		-0.0006	0.0006			
WG522746LFB2	LFB	07/13/21 15:11	MS210702-2	.05005		.04876	mg/L	97	80	120			
L66693-04DUP	DUP	07/13/21 15:14			.0015	.00145	mg/L				3	20	RA
L66731-09MS	MS	07/13/21 15:20	MS210702-2	.05005	.00184	.05094	mg/L	98	75	125			
L66731-09MSD	MSD	07/13/21 15:25	MS210702-2	.05005	.00184	.05033	mg/L	97	75	125	1	20	

**WG523321**

WG523321ICV	ICV	07/15/21 15:18	MS210630-2	.05		.05027	mg/L	101	90	110			
WG523321ICB	ICB	07/15/21 15:20				U	mg/L		-0.0006	0.0006			
WG522974PBS	PBS	07/15/21 15:29				U	mg/L		-0.0006	0.0006			
WG522974LFB2	LFB	07/15/21 15:31	MS210702-2	.05005		.04809	mg/L	96	80	120			
L66693-02MS	MS	07/15/21 15:36	MS210702-2	.05005	.00159	.04874	mg/L	94	75	125			
L66693-02MSD	MSD	07/15/21 15:38	MS210702-2	.05005	.00159	.04946	mg/L	96	75	125	1	20	
L66732-17DUP	DUP	07/15/21 16:13			.00041	.00041	mg/L				0	20	RA

**Arsenic, total (3050)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523339</b>													
WG523339ICV	ICV	07/15/21 15:38	MS210630-2	.05		.04847	mg/L	97	90	110			
WG523339ICB	ICB	07/15/21 15:40				U	mg/L		-0.0006	0.0006			
WG523131PBS	PBS	07/15/21 15:50				U	mg/Kg		-0.3	0.3			
WG523131LCSS	LCSS	07/15/21 15:52	PCN63584	156		148.57977	mg/Kg		129	183			
WG523131LCSSD	LCSSD	07/15/21 15:54	PCN63584	156		152.54803	mg/Kg		129	183	3	20	
L66732-17MS	MS	07/15/21 16:35	MS210521-6	25.025	1.47	26.03875	mg/Kg	98	75	125			
L66732-17MSD	MSD	07/15/21 16:37	MS210521-6	25.025	1.47	29.96599	mg/Kg	114	75	125	14	20	

**WG523656**

WG523656ICV	ICV	07/20/21 19:44	MS210630-2	.05		.04932	mg/L	99	90	110			
WG523656ICB	ICB	07/20/21 19:46				U	mg/L		-0.0006	0.0006			
WG523131PBS	PBS	07/20/21 19:55				U	mg/Kg		-0.3	0.3			
WG523131LCSS	LCSS	07/20/21 19:57	PCN63584	156		132.45078	mg/Kg		129	183			
WG523131LCSSD	LCSSD	07/20/21 19:59	PCN63584	156		133.7896	mg/Kg		129	183	1	20	
L66732-17MS	MS	07/20/21 20:06	MS210521-6	25.025	1.1	25.36482	mg/Kg	97	75	125			
L66732-17MSD	MSD	07/20/21 20:12	MS210521-6	25.025	1.1	25.47136	mg/Kg	97	75	125	0	20	

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Cadmium (1312)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523021</b>													
WG523021ICV	ICV	07/12/21 20:00	MS210630-2	.05		.049376	mg/L	99	90	110			
WG523021ICB	ICB	07/12/21 20:01				U	mg/L		-0.00015	0.00015			
WG522653PBS	PBS	07/12/21 20:11				U	mg/L		-0.00015	0.00015			
WG522653LFB2	LFB	07/12/21 20:13	MS210702-2	.05005		.048451	mg/L	97	80	120			
L66691-12MS	MS	07/12/21 20:18	MS210702-2	.05005	U	.048611	mg/L	97	75	125			
L66691-12MSD	MSD	07/12/21 20:20	MS210702-2	.05005	U	.049231	mg/L	98	75	125	1	20	
L66691-14DUP	DUP	07/12/21 20:29			U	U	mg/L				0	20	RA

**WG523066**

WG523066ICV	ICV	07/13/21 14:56	MS210630-2	.05		.049544	mg/L	99	90	110			
WG523066ICB	ICB	07/13/21 14:58				U	mg/L		-0.00015	0.00015			
WG522746PBS	PBS	07/13/21 15:09				U	mg/L		-0.00015	0.00015			
WG522746LFB2	LFB	07/13/21 15:11	MS210702-2	.05005		.046286	mg/L	92	80	120			
L66693-04DUP	DUP	07/13/21 15:14			U	U	mg/L				0	20	RA
L66731-09MS	MS	07/13/21 15:20	MS210702-2	.05005	U	.046177	mg/L	92	75	125			
L66731-09MSD	MSD	07/13/21 15:25	MS210702-2	.05005	U	.046195	mg/L	92	75	125	0	20	

**WG523321**

WG523321ICV	ICV	07/15/21 15:18	MS210630-2	.05		.051174	mg/L	102	90	110			
WG523321ICB	ICB	07/15/21 15:20				U	mg/L		-0.00015	0.00015			
WG522974PBS	PBS	07/15/21 15:29				U	mg/L		-0.00015	0.00015			
WG522974LFB2	LFB	07/15/21 15:31	MS210702-2	.05005		.04661	mg/L	93	80	120			
L66693-02MS	MS	07/15/21 15:36	MS210702-2	.05005	U	.04671	mg/L	93	75	125			
L66693-02MSD	MSD	07/15/21 15:38	MS210702-2	.05005	U	.046757	mg/L	93	75	125	0	20	
L66732-17DUP	DUP	07/15/21 16:13			U	U	mg/L				0	20	RA

**Cadmium, total (3050)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523339</b>													
WG523339ICV	ICV	07/15/21 15:38	MS210630-2	.05		.050128	mg/L	100	90	110			
WG523339ICB	ICB	07/15/21 15:40				.000114	mg/L		-0.00015	0.00015			
WG523131PBS	PBS	07/15/21 15:50				U	mg/Kg		-0.075	0.075			
WG523131LCSS	LCSS	07/15/21 15:52	PCN63584	137		134.9276	mg/Kg		113	160			
WG523131LCSSD	LCSSD	07/15/21 15:54	PCN63584	137		136.67920	mg/Kg		113	160	1	20	
L66732-17MS	MS	07/15/21 16:35	MS210521-6	25.025	.252	24.576013	mg/Kg	97	75	125			
L66732-17MSD	MSD	07/15/21 16:37	MS210521-6	25.025	.252	28.404131	mg/Kg	112	75	125	14	20	

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Calcium (1312)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523072</b>													
WG523072ICV	ICV	07/13/21 10:56	II210712-1	100		99.72	mg/L	100	90	110			
WG523072ICB	ICB	07/13/21 11:00				U	mg/L		-0.3	0.3			
WG522653PBS	PBS	07/13/21 11:24				U	mg/L		-0.3	0.3			
WG522653LFB1	LFB	07/13/21 11:28	II210708-3	67.99734		69.5	mg/L	102	80	120			
L66691-11MS	MS	07/13/21 11:36	II210708-3	67.99734	1.67	69.32	mg/L	99	75	125			
L66691-11MSD	MSD	07/13/21 11:40	II210708-3	67.99734	1.67	69.96	mg/L	100	75	125	1	20	
L66691-14DUP	DUP	07/13/21 11:55			1.53	1.34	mg/L				13	20	

**WG523103**

WG523103ICV	ICV	07/13/21 21:33	II210712-1	100		99.13	mg/L	99	90	110			
WG523103ICB	ICB	07/13/21 21:36				.19	mg/L		-0.3	0.3			
WG522746PBS	PBS	07/13/21 22:00				U	mg/L		-0.3	0.3			
WG522746LFB1	LFB	07/13/21 22:04	II210708-3	67.99734		68.99	mg/L	101	80	120			
L66693-04DUP	DUP	07/13/21 22:11			8.57	8.25	mg/L				4	20	
L66693-05MS	MS	07/13/21 22:19	II210708-3	67.99734	10.1	78.57	mg/L	101	75	125			
L66693-05MSD	MSD	07/13/21 22:22	II210708-3	67.99734	10.1	79.63	mg/L	102	75	125	1	20	

**WG523284**

WG523284ICV	ICV	07/15/21 11:04	II210712-1	100		99.54	mg/L	100	90	110			
WG523284ICB	ICB	07/15/21 11:08				U	mg/L		-0.3	0.3			
WG522974PBS	PBS	07/15/21 11:32				U	mg/L		-0.3	0.3			
WG522974LFB1	LFB	07/15/21 11:36	II210708-3	67.99734		68.89	mg/L	101	80	120			
L66693-01MS	MS	07/15/21 11:44	II210708-3	67.99734	5.91	73.59	mg/L	100	75	125			
L66693-01MSD	MSD	07/15/21 11:48	II210708-3	67.99734	5.91	73.41	mg/L	99	75	125	0	20	
L66732-17DUP	DUP	07/15/21 13:06			7.75	8.34	mg/L				7	20	

**Calcium, total (3050)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523283</b>													
WG523283ICV	ICV	07/16/21 3:07	II210712-1	100		100.7	mg/L	101	90	110			
WG523283ICB	ICB	07/16/21 3:10				U	mg/L		-0.3	0.3			
WG523131PBS	PBS	07/16/21 3:34				U	mg/Kg		-30	30			
WG523131LCSS	LCSS	07/16/21 3:38	PCN63584	4760		4395	mg/Kg		3890	5640			
WG523131LCSSD	LCSSD	07/16/21 3:41	PCN63584	4760		4385	mg/Kg		3890	5640	0	20	
L66732-07MS	MS	07/16/21 4:22	II210708-3	6799.734	5730	10650	mg/Kg	72	75	125			MA
L66732-07MSD	MSD	07/16/21 4:26	II210708-3	6799.734	5730	12690	mg/Kg	102	75	125	17	20	
<b>WG523453</b>													
WG523453ICV	ICV	07/18/21 21:59	II210712-1	100		98.75	mg/L	99	90	110			
WG523453ICB	ICB	07/18/21 22:03				.15	mg/L		-0.3	0.3			
WG523131PBS	PBS	07/18/21 22:26				U	mg/Kg		-30	30			
WG523131LCSS	LCSS	07/18/21 22:30	PCN63584	4760		4279	mg/Kg		3890	5640			
WG523131LCSSD	LCSSD	07/18/21 22:34	PCN63584	4760		4404	mg/Kg		3890	5640	3	20	
L66732-07MS	MS	07/18/21 23:11	II210708-3	6799.734	5960	10670	mg/Kg	69	75	125			MA
L66732-07MSD	MSD	07/18/21 23:14	II210708-3	6799.734	5960	12890	mg/Kg	102	75	125	19	20	

**Hudbay Minerals**

ACZ Project ID: **L66732**

*NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.*

**Carbon, total (TC)** ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523113</b>													
WG523113PBS	PBS	07/19/21 13:00				U	%		-0.3	0.3			
WG523113LCSS	LCSS	07/19/21 13:12	PCN61786	4.35		4.3	%	99	80	120			
L66732-01DUP	DUP	07/19/21 13:37			.7	.7	%				0	20	RA

**Carbon, total inorganic (TIC)** ASA No. 9 29-2.2.4 (calc TC - TOC)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523113</b>													
WG523113PBS	PBS	07/19/21 13:00				U	%		-0.3	0.3			
L66732-01DUP	DUP	07/19/21 13:37			.4	.4	%				0	20	RA

**Carbon, total organic (TOC)** ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523113</b>													
WG523113PBS	PBS	07/19/21 13:00				U	%		-0.3	0.3			
L66732-01DUP	DUP	07/19/21 13:37			.3	.3	%				0	20	RA

**Conductivity @25C** SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523645</b>													
L66732-01DUP	DUP	07/20/21 17:07			.251	.209	mmhos/cm				18	20	

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Copper (1312)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523021</b>													
WG523021ICV	ICV	07/12/21 20:00	MS210630-2	.05		.05046	mg/L	101	90	110			
WG523021ICB	ICB	07/12/21 20:01				U	mg/L		-0.0024	0.0024			
WG522653PBS	PBS	07/12/21 20:11				U	mg/L		-0.0024	0.0024			
WG522653LFB2	LFB	07/12/21 20:13	MS210702-2	.05		.05105	mg/L	102	80	120			
L66691-12MS	MS	07/12/21 20:18	MS210702-2	.05	.00596	.05551	mg/L	99	75	125			
L66691-12MSD	MSD	07/12/21 20:20	MS210702-2	.05	.00596	.05699	mg/L	102	75	125	3	20	
L66691-14DUP	DUP	07/12/21 20:29			.00382	.00319	mg/L				18	20	RA

**WG523066**

WG523066ICV	ICV	07/13/21 14:56	MS210630-2	.05		.05173	mg/L	103	90	110			
WG523066ICB	ICB	07/13/21 14:58				U	mg/L		-0.0024	0.0024			
WG522746PBS	PBS	07/13/21 15:09				U	mg/L		-0.0024	0.0024			
WG522746LFB2	LFB	07/13/21 15:11	MS210702-2	.05		.04929	mg/L	99	80	120			
L66693-04DUP	DUP	07/13/21 15:14			.00511	.00445	mg/L				14	20	RA
L66731-09MS	MS	07/13/21 15:20	MS210702-2	.05	.0385	.0893	mg/L	102	75	125			
L66731-09MSD	MSD	07/13/21 15:25	MS210702-2	.05	.0385	.08839	mg/L	100	75	125	1	20	

**WG523321**

WG523321ICV	ICV	07/15/21 15:18	MS210630-2	.05		.05151	mg/L	103	90	110			
WG523321ICB	ICB	07/15/21 15:20				U	mg/L		-0.0024	0.0024			
WG522974PBS	PBS	07/15/21 15:29				U	mg/L		-0.0024	0.0024			
WG522974LFB2	LFB	07/15/21 15:31	MS210702-2	.05		.04848	mg/L	97	80	120			
L66693-02MS	MS	07/15/21 15:36	MS210702-2	.05	.00602	.05289	mg/L	94	75	125			
L66693-02MSD	MSD	07/15/21 15:38	MS210702-2	.05	.00602	.05366	mg/L	95	75	125	1	20	
L66732-17DUP	DUP	07/15/21 16:13			.01	.01068	mg/L				7	20	

**Copper, total (3050)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523339</b>													
WG523339ICV	ICV	07/15/21 15:38	MS210630-2	.05		.05067	mg/L	101	90	110			
WG523339ICB	ICB	07/15/21 15:40				U	mg/L		-0.0024	0.0024			
WG523131PBS	PBS	07/15/21 15:50				U	mg/Kg		-1.2	1.2			
WG523131LCSS	LCSS	07/15/21 15:52	PCN63584	54.9		51.10574	mg/Kg		46.1	63.6			
WG523131LCSSD	LCSSD	07/15/21 15:54	PCN63584	54.9		55.75301	mg/Kg		46.1	63.6	9	20	
L66732-17MS	MS	07/15/21 16:35	MS210521-6	25	56.9	120.48688	mg/Kg	254	75	125			M1
L66732-17MSD	MSD	07/15/21 16:37	MS210521-6	25	56.9	98.28855	mg/Kg	166	75	125	20	20	M1

**WG523723**

WG523723ICV	ICV	07/21/21 11:41	MS210630-2	.05		.0498	mg/L	100	90	110			
WG523723ICB	ICB	07/21/21 11:43				U	mg/L		-0.0024	0.0024			
WG523131PBS	PBS	07/21/21 11:54				U	mg/Kg		-1.2	1.2			
WG523131LCSS	LCSS	07/21/21 11:56	PCN63584	54.9		54.48883	mg/Kg		46.1	63.6			
WG523131LCSSD	LCSSD	07/21/21 11:57	PCN63584	54.9		56.77692	mg/Kg		46.1	63.6	4	20	
L66732-17MS	MS	07/21/21 12:03	MS210521-6	25	78.5	155.19607	mg/Kg	307	75	125			M1
L66732-17MSD	MSD	07/21/21 12:04	MS210521-6	25	78.5	102.14227	mg/Kg	95	75	125	41	20	RD
WG523545PBS	PBS	07/21/21 12:10				U	mg/Kg		-1.2	1.2			

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Iron (1312)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523072</b>													
WG523072ICV	ICV	07/13/21 10:56	II210712-1	2		1.962	mg/L	98	90	110			
WG523072ICB	ICB	07/13/21 11:00				U	mg/L		-0.18	0.18			
WG522653PBS	PBS	07/13/21 11:24				U	mg/L		-0.18	0.18			
WG522653LFB1	LFB	07/13/21 11:28	II210708-3	1.0001		1.036	mg/L	104	80	120			
L66691-11MS	MS	07/13/21 11:36	II210708-3	1.0001	.417	1.367	mg/L	95	75	125			
L66691-11MSD	MSD	07/13/21 11:40	II210708-3	1.0001	.417	1.374	mg/L	96	75	125	1	20	
L66691-14DUP	DUP	07/13/21 11:55			.437	.513	mg/L				16	20	RA

**WG523103**

WG523103ICV	ICV	07/13/21 21:33	II210712-1	2		1.954	mg/L	98	90	110			
WG523103ICB	ICB	07/13/21 21:36				U	mg/L		-0.18	0.18			
WG522746PBS	PBS	07/13/21 22:00				U	mg/L		-0.18	0.18			
WG522746LFB1	LFB	07/13/21 22:04	II210708-3	1.0001		1.001	mg/L	100	80	120			
L66693-04DUP	DUP	07/13/21 22:11			.175	.149	mg/L				16	20	RA
L66693-05MS	MS	07/13/21 22:19	II210708-3	1.0001	.071	1.081	mg/L	101	75	125			
L66693-05MSD	MSD	07/13/21 22:22	II210708-3	1.0001	.071	1.087	mg/L	102	75	125	1	20	

**WG523284**

WG523284ICV	ICV	07/15/21 11:04	II210712-1	2		1.961	mg/L	98	90	110			
WG523284ICB	ICB	07/15/21 11:08				U	mg/L		-0.18	0.18			
WG522974PBS	PBS	07/15/21 11:32				U	mg/L		-0.18	0.18			
WG522974LFB1	LFB	07/15/21 11:36	II210708-3	1.0001		1	mg/L	100	80	120			
L66693-01MS	MS	07/15/21 11:44	II210708-3	1.0001	.299	1.277	mg/L	98	75	125			
L66693-01MSD	MSD	07/15/21 11:48	II210708-3	1.0001	.299	1.279	mg/L	98	75	125	0	20	
L66732-17DUP	DUP	07/15/21 13:06			U	U	mg/L				0	20	RA

**Iron, total (3050)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523506</b>													
WG523506ICV	ICV	07/20/21 2:05	II210712-1	2		1.991	mg/L	100	90	110			
WG523506ICB	ICB	07/20/21 2:09				U	mg/L		-0.18	0.18			
WG523131PBS	PBS	07/20/21 2:32				U	mg/Kg		-18	18			
WG523131LCSS	LCSS	07/20/21 2:36	PCN63584	14100		12810	mg/Kg		8470	19700			
WG523131LCSSD	LCSSD	07/20/21 2:39	PCN63584	14100		14060	mg/Kg		8470	19700	9	20	
L66732-07MS	MS	07/20/21 3:16	II210708-3	100.01	7570	8296	mg/Kg	726	75	125			M3
L66732-07MSD	MSD	07/20/21 3:20	II210708-3	100.01	7570	8488	mg/Kg	918	75	125	2	20	M3

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Lead (1312)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523021</b>													
WG523021ICV	ICV	07/12/21 20:00	MS210630-2	.05		.04961	mg/L	99	90	110			
WG523021ICB	ICB	07/12/21 20:01				U	mg/L		-0.0003	0.0003			
WG522653PBS	PBS	07/12/21 20:11				U	mg/L		-0.0003	0.0003			
WG522653LFB2	LFB	07/12/21 20:13	MS210702-2	.05005		.04957	mg/L	99	80	120			
L66691-12MS	MS	07/12/21 20:18	MS210702-2	.05005	.00056	.05016	mg/L	99	75	125			
L66691-12MSD	MSD	07/12/21 20:20	MS210702-2	.05005	.00056	.05069	mg/L	100	75	125	1	20	
L66691-14DUP	DUP	07/12/21 20:29			.00121	.00088	mg/L				32	20	RD

**WG523066**

WG523066ICV	ICV	07/13/21 14:56	MS210630-2	.05		.04964	mg/L	99	90	110			
WG523066ICB	ICB	07/13/21 14:58				U	mg/L		-0.0003	0.0003			
WG522746PBS	PBS	07/13/21 15:09				U	mg/L		-0.0003	0.0003			
WG522746LFB2	LFB	07/13/21 15:11	MS210702-2	.05005		.04722	mg/L	94	80	120			
L66693-04DUP	DUP	07/13/21 15:14			.00027	.00023	mg/L				16	20	RA
L66731-09MS	MS	07/13/21 15:20	MS210702-2	.05005	.00015	.04748	mg/L	95	75	125			
L66731-09MSD	MSD	07/13/21 15:25	MS210702-2	.05005	.00015	.04755	mg/L	95	75	125	0	20	

**WG523321**

WG523321ICV	ICV	07/15/21 15:18	MS210630-2	.05		.05055	mg/L	101	90	110			
WG523321ICB	ICB	07/15/21 15:20				U	mg/L		-0.0003	0.0003			
WG522974PBS	PBS	07/15/21 15:29				U	mg/L		-0.0003	0.0003			
WG522974LFB2	LFB	07/15/21 15:31	MS210702-2	.05005		.04643	mg/L	93	80	120			
L66693-02MS	MS	07/15/21 15:36	MS210702-2	.05005	.00037	.04751	mg/L	94	75	125			
L66693-02MSD	MSD	07/15/21 15:38	MS210702-2	.05005	.00037	.04717	mg/L	94	75	125	1	20	
L66732-17DUP	DUP	07/15/21 16:13			.00012	.0002	mg/L				50	20	RA

**Lead, total (3050)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523339</b>													
WG523339ICV	ICV	07/15/21 15:38	MS210630-2	.05		.05125	mg/L	103	90	110			
WG523339ICB	ICB	07/15/21 15:40				.00033	mg/L		-0.0003	0.0003			BB
WG523131PBS	PBS	07/15/21 15:50				U	mg/Kg		-0.15	0.15			
WG523131LCSS	LCSS	07/15/21 15:52	PCN63584	130		127.71806	mg/Kg		107	152			
WG523131LCSSD	LCSSD	07/15/21 15:54	PCN63584	130		137.31559	mg/Kg		107	152	7	20	
L66732-17MS	MS	07/15/21 16:35	MS210521-6	25.025	9.71	35.33792	mg/Kg	102	75	125			
L66732-17MSD	MSD	07/15/21 16:37	MS210521-6	25.025	9.71	40.40239	mg/Kg	123	75	125	13	20	

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Magnesium (1312)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523072</b>													
WG523072ICV	ICV	07/13/21 10:56	II210712-1	100		96.67	mg/L	97	90	110			
WG523072ICB	ICB	07/13/21 11:00				U	mg/L		-0.6	0.6			
WG522653PBS	PBS	07/13/21 11:24				U	mg/L		-0.6	0.6			
WG522653LFB1	LFB	07/13/21 11:28	II210708-3	50.00074		49.16	mg/L	98	80	120			
L66691-11MS	MS	07/13/21 11:36	II210708-3	50.00074	.21	48.21	mg/L	96	75	125			
L66691-11MSD	MSD	07/13/21 11:40	II210708-3	50.00074	.21	48.55	mg/L	97	75	125	1	20	
L66691-14DUP	DUP	07/13/21 11:55			.25	.23	mg/L				8	20	RA

**WG523103**

WG523103ICV	ICV	07/13/21 21:33	II210712-1	100		96.5	mg/L	97	90	110			
WG523103ICB	ICB	07/13/21 21:36				U	mg/L		-0.6	0.6			
WG522746PBS	PBS	07/13/21 22:00				U	mg/L		-0.6	0.6			
WG522746LFB1	LFB	07/13/21 22:04	II210708-3	50.00074		48.95	mg/L	98	80	120			
L66693-04DUP	DUP	07/13/21 22:11			.44	.28	mg/L				44	20	RA
L66693-05MS	MS	07/13/21 22:19	II210708-3	50.00074	.39	48.65	mg/L	97	75	125			
L66693-05MSD	MSD	07/13/21 22:22	II210708-3	50.00074	.39	49.52	mg/L	98	75	125	2	20	

**WG523284**

WG523284ICV	ICV	07/15/21 11:04	II210712-1	100		96.61	mg/L	97	90	110			
WG523284ICB	ICB	07/15/21 11:08				U	mg/L		-0.6	0.6			
WG522974PBS	PBS	07/15/21 11:32				U	mg/L		-0.6	0.6			
WG522974LFB1	LFB	07/15/21 11:36	II210708-3	50.00074		48.92	mg/L	98	80	120			
L66693-01MS	MS	07/15/21 11:44	II210708-3	50.00074	.3	48.5	mg/L	96	75	125			
L66693-01MSD	MSD	07/15/21 11:48	II210708-3	50.00074	.3	48.2	mg/L	96	75	125	1	20	
L66732-17DUP	DUP	07/15/21 13:06			.23	.28	mg/L				20	20	RA

**Magnesium, total (3050)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523283</b>													
WG523283ICV	ICV	07/16/21 3:07	II210712-1	100		98.06	mg/L	98	90	110			
WG523283ICB	ICB	07/16/21 3:10				U	mg/L		-0.6	0.6			
WG523131PBS	PBS	07/16/21 3:34				U	mg/Kg		-60	60			
WG523131LCSS	LCSS	07/16/21 3:38	PCN63584	2320		2195	mg/Kg		1760	2880			
WG523131LCSSD	LCSSD	07/16/21 3:41	PCN63584	2320		2215	mg/Kg		1760	2880	1	20	
L66732-07MS	MS	07/16/21 4:22	II210708-3	5000.074	1660	6758	mg/Kg	102	75	125			
L66732-07MSD	MSD	07/16/21 4:26	II210708-3	5000.074	1660	6529	mg/Kg	97	75	125	3	20	
<b>WG523453</b>													
WG523453ICV	ICV	07/18/21 21:59	II210712-1	100		95.99	mg/L	96	90	110			
WG523453ICB	ICB	07/18/21 22:03				U	mg/L		-0.6	0.6			
WG523131PBS	PBS	07/18/21 22:26				U	mg/Kg		-60	60			
WG523131LCSS	LCSS	07/18/21 22:30	PCN63584	2320		2130	mg/Kg		1760	2880			
WG523131LCSSD	LCSSD	07/18/21 22:34	PCN63584	2320		2265	mg/Kg		1760	2880	6	20	
L66732-07MS	MS	07/18/21 23:11	II210708-3	5000.074	1730	6801	mg/Kg	101	75	125			
L66732-07MSD	MSD	07/18/21 23:14	II210708-3	5000.074	1730	6659	mg/Kg	99	75	125	2	20	

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Manganese (1312)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523072</b>													
WG523072ICV	ICV	07/13/21 10:56	II210712-1	2		1.941	mg/L	97	90	110			
WG523072ICB	ICB	07/13/21 11:00				U	mg/L		-0.03	0.03			
WG522653PBS	PBS	07/13/21 11:24				U	mg/L		-0.03	0.03			
WG522653LFB1	LFB	07/13/21 11:28	II210708-3	.5005		.508	mg/L	101	80	120			
L66691-11MS	MS	07/13/21 11:36	II210708-3	.5005	.012	.5	mg/L	98	75	125			
L66691-11MSD	MSD	07/13/21 11:40	II210708-3	.5005	.012	.505	mg/L	99	75	125	1	20	
L66691-14DUP	DUP	07/13/21 11:55			.013	.014	mg/L				7	20	RA

**WG523103**

WG523103ICV	ICV	07/13/21 21:33	II210712-1	2		1.93	mg/L	97	90	110			
WG523103ICB	ICB	07/13/21 21:36				U	mg/L		-0.03	0.03			
WG522746PBS	PBS	07/13/21 22:00				U	mg/L		-0.03	0.03			
WG522746LFB1	LFB	07/13/21 22:04	II210708-3	.5005		.494	mg/L	99	80	120			
L66693-04DUP	DUP	07/13/21 22:11			U	U	mg/L				0	20	RA
L66693-05MS	MS	07/13/21 22:19	II210708-3	.5005	U	.495	mg/L	99	75	125			
L66693-05MSD	MSD	07/13/21 22:22	II210708-3	.5005	U	.502	mg/L	100	75	125	1	20	

**WG523284**

WG523284ICV	ICV	07/15/21 11:04	II210712-1	2		1.935	mg/L	97	90	110			
WG523284ICB	ICB	07/15/21 11:08				U	mg/L		-0.03	0.03			
WG522974PBS	PBS	07/15/21 11:32				U	mg/L		-0.03	0.03			
WG522974LFB1	LFB	07/15/21 11:36	II210708-3	.5005		.494	mg/L	99	80	120			
L66693-01MS	MS	07/15/21 11:44	II210708-3	.5005	U	.494	mg/L	99	75	125			
L66693-01MSD	MSD	07/15/21 11:48	II210708-3	.5005	U	.495	mg/L	99	75	125	0	20	
L66732-17DUP	DUP	07/15/21 13:06			U	U	mg/L				0	20	RA

**Manganese, total (3050)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523283</b>													
WG523283ICV	ICV	07/16/21 3:07	II210712-1	2		1.979	mg/L	99	90	110			
WG523283ICB	ICB	07/16/21 3:10				U	mg/L		-0.03	0.03			
WG523131PBS	PBS	07/16/21 3:34				U	mg/Kg		-3	3			
WG523131LCSS	LCSS	07/16/21 3:38	PCN63584	269		257.9	mg/Kg		221	317			
WG523131LCSSD	LCSSD	07/16/21 3:41	PCN63584	269		264	mg/Kg		221	317	2	20	
L66732-07MS	MS	07/16/21 4:22	II210708-3	50.05	156	208.6	mg/Kg	105	75	125			
L66732-07MSD	MSD	07/16/21 4:26	II210708-3	50.05	156	214.3	mg/Kg	116	75	125	3	20	
<b>WG523453</b>													
WG523453ICV	ICV	07/18/21 21:59	II210712-1	2		1.925	mg/L	96	90	110			
WG523453ICB	ICB	07/18/21 22:03				U	mg/L		-0.03	0.03			
WG523131PBS	PBS	07/18/21 22:26				U	mg/Kg		-3	3			
WG523131LCSS	LCSS	07/18/21 22:30	PCN63584	269		248.4	mg/Kg		221	317			
WG523131LCSSD	LCSSD	07/18/21 22:34	PCN63584	269		265	mg/Kg		221	317	6	20	
L66732-07MS	MS	07/18/21 23:11	II210708-3	50.05	160	208.7	mg/Kg	97	75	125			
L66732-07MSD	MSD	07/18/21 23:14	II210708-3	50.05	160	217.7	mg/Kg	115	75	125	4	20	

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Mercury (1312)**

M7470A CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523039</b>													
WG523039ICV1	ICV	07/14/21 9:56	HG210701-3	.00501		.00497	mg/L	99	95	105			
WG523039ICB	ICB	07/14/21 9:57				U	mg/L		-0.0002	0.0002			
<b>WG523163</b>													
WG523163LFB	LFB	07/14/21 14:12	HG210709-9	.002002		.00182	mg/L	91	85	115			
WG522746PBS	PBS	07/14/21 14:13				U	mg/L		-0.0006	0.0006			
WG522746LFB1	LFB	07/14/21 14:14	HG210709-9	.002002		.00191	mg/L	95	85	115			
L66693-04DUP	DUP	07/14/21 14:16			U	U	mg/L				0	20	RA
L66693-05MS	MS	07/14/21 14:18	HG210709-9	.002002	U	.002	mg/L	100	85	115			
L66693-05MSD	MSD	07/14/21 14:19	HG210709-9	.002002	U	.0022	mg/L	110	85	115	10	20	
<b>WG523165</b>													
WG523165LFB	LFB	07/14/21 14:32	HG210709-9	.002002		.00179	mg/L	89	85	115			
WG522974PBS	PBS	07/14/21 14:33				U	mg/L		-0.0006	0.0006			
WG522974LFB1	LFB	07/14/21 14:34	HG210709-9	.002002		.00176	mg/L	88	85	115			
L66693-01MS	MS	07/14/21 14:36	HG210709-9	.002002	U	.00173	mg/L	86	85	115			
L66693-01MSD	MSD	07/14/21 14:37	HG210709-9	.002002	U	.00181	mg/L	90	85	115	5	20	
L66732-17DUP	DUP	07/14/21 14:55			U	U	mg/L				0	20	RA
<b>WG523162</b>													
WG523162LFB	LFB	07/14/21 15:01	HG210709-9	.002002		.00176	mg/L	88	85	115			
WG522409PBS	PBS	07/14/21 15:02				U	mg/L		-0.0006	0.0006			
WG522409LFB1	LFB	07/14/21 15:03	HG210709-9	.002002		.00185	mg/L	92	85	115			
WG522653LFB1	LFB	07/14/21 15:16	HG210709-9	.002002		.0017	mg/L	85	85	115			
WG522653PBS	PBS	07/14/21 15:17				U	mg/L		-0.0006	0.0006			
L66691-11MS	MS	07/14/21 15:19	HG210709-9	.002002	U	.00194	mg/L	97	85	115			
L66691-11MSD	MSD	07/14/21 15:20	HG210709-9	.002002	U	.00194	mg/L	97	85	115	0	20	
L66691-14DUP	DUP	07/14/21 15:24			U	U	mg/L				0	20	RA

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Mercury by Direct Combustion AA**

M7473 CVAAS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG520390</b>													
WG520390ICV4	ICV	06/04/21 12:43	HG210603-2	10000		10200	ng/g	102	90	110			
<b>WG522547</b>													
WG522547ICV1	ICV	07/06/21 10:51	HG210603-4	100		100	ng/g	100	90	110			
WG522547ICV2	ICV	07/06/21 10:58	HG210603-4	100		100	ng/g	100	90	110			
WG522547ICV3	ICV	07/06/21 11:05	HG210603-3	1000		1010	ng/g	101	90	110			
WG522547ICV4	ICV	07/06/21 11:12	HG210603-2	10000		10400	ng/g	104	90	110			
WG522547PBS	PBS	07/06/21 11:29				U	ng/g		-4.47	4.47			
WG522547LCSS	LCSS	07/06/21 11:38	PCN60050	90		78.5	ng/g		80	120			
WG522547LCSSD	LCSSD	07/06/21 11:46	PCN60050	90		81.6	ng/g		80	120	4	20	
L66693-01MS	MS	07/06/21 12:39	HG210603-3				ng/g	93	80	120			
L66693-02DUP	DUP	07/06/21 13:04			3.97	3.67	ng/g				8	20	
<b>WG522654</b>													
WG522654ICV1	ICV	07/07/21 15:27	HG210603-4	100		106	ng/g	106	90	110			
WG522654ICV2	ICV	07/07/21 15:34	HG210603-4	100		102	ng/g	102	90	110			
WG522654ICV3	ICV	07/07/21 15:41	HG210603-3	1000		1020	ng/g	102	90	110			
WG522654ICV4	ICV	07/07/21 15:48	HG210603-2	10000		10200	ng/g	102	90	110			
WG522654PBS	PBS	07/07/21 16:07				U	ng/g		-4.68	4.68			
WG522654LCSS	LCSS	07/07/21 16:15	PCN60050	90		77.2	ng/g		80	120			
WG522654LCSSD	LCSSD	07/07/21 16:24	PCN60050	90		78.6	ng/g		80	120	2	20	
L66713-01MS	MS	07/07/21 16:42	HG210603-3				ng/g	81	80	120			
L66713-02DUP	DUP	07/07/21 16:59			26.7	16.9	ng/g				45	20	RD
<b>WG522695</b>													
WG522695ICV1	ICV	07/08/21 8:30	HG210603-4	100		97.3	ng/g	97	90	110			
WG522695ICV2	ICV	07/08/21 8:37	HG210603-4	100		100	ng/g	100	90	110			
WG522695ICV3	ICV	07/08/21 8:45	HG210603-3	1000		1010	ng/g	101	90	110			
WG522695ICV4	ICV	07/08/21 8:52	HG210603-2	10000		10000	ng/g	100	90	110			
WG522695PBS	PBS	07/08/21 9:09				U	ng/g		-4.02	4.02			
WG522695LCSS	LCSS	07/08/21 9:18	PCN60050	90		77.7	ng/g		80	120			
WG522695LCSSD	LCSSD	07/08/21 9:27	PCN60050	90		80.9	ng/g		80	120	4	20	
L66731-07MS	MS	07/08/21 9:44	HG210603-3				ng/g	84	80	120			
L66731-08DUP	DUP	07/08/21 10:02			3.51	5.48	ng/g				44	20	RA

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Molybdenum (1312)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523072</b>													
WG523072ICV	ICV	07/13/21 10:56	II210712-1	2		2	mg/L	100	90	110			
WG523072ICB	ICB	07/13/21 11:00				U	mg/L		-0.06	0.06			
WG522653PBS	PBS	07/13/21 11:24				U	mg/L		-0.06	0.06			
WG522653LFB1	LFB	07/13/21 11:28	II210708-3	.501		.505	mg/L	101	80	120			
L66691-11MS	MS	07/13/21 11:36	II210708-3	.501	U	.495	mg/L	99	75	125			
L66691-11MSD	MSD	07/13/21 11:40	II210708-3	.501	U	.496	mg/L	99	75	125	0	20	
L66691-14DUP	DUP	07/13/21 11:55			U	U	mg/L				0	20	RA

**WG523103**

WG523103ICV	ICV	07/13/21 21:33	II210712-1	2		1.974	mg/L	99	90	110			
WG523103ICB	ICB	07/13/21 21:36				U	mg/L		-0.06	0.06			
WG522746PBS	PBS	07/13/21 22:00				U	mg/L		-0.06	0.06			
WG522746LFB1	LFB	07/13/21 22:04	II210708-3	.501		.5	mg/L	100	80	120			
L66693-04DUP	DUP	07/13/21 22:11			U	U	mg/L				0	20	RA
L66693-05MS	MS	07/13/21 22:19	II210708-3	.501	U	.49	mg/L	98	75	125			
L66693-05MSD	MSD	07/13/21 22:22	II210708-3	.501	U	.5	mg/L	100	75	125	2	20	

**WG523284**

WG523284ICV	ICV	07/15/21 11:04	II210712-1	2		1.995	mg/L	100	90	110			
WG523284ICB	ICB	07/15/21 11:08				U	mg/L		-0.06	0.06			
WG522974PBS	PBS	07/15/21 11:32				U	mg/L		-0.06	0.06			
WG522974LFB1	LFB	07/15/21 11:36	II210708-3	.501		.494	mg/L	99	80	120			
L66693-01MS	MS	07/15/21 11:44	II210708-3	.501	U	.492	mg/L	98	75	125			
L66693-01MSD	MSD	07/15/21 11:48	II210708-3	.501	U	.484	mg/L	97	75	125	2	20	
L66732-17DUP	DUP	07/15/21 13:06			U	U	mg/L				0	20	RA

**Molybdenum, total (3050)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523283</b>													
WG523283ICV	ICV	07/16/21 3:07	II210712-1	2		2.014	mg/L	101	90	110			
WG523283ICB	ICB	07/16/21 3:10				U	mg/L		-0.06	0.06			
WG523131PBS	PBS	07/16/21 3:34				U	mg/Kg		-6	6			
WG523131LCSS	LCSS	07/16/21 3:38	PCN63584	95.4		89.03	mg/Kg		76.4	114			
WG523131LCSSD	LCSSD	07/16/21 3:41	PCN63584	95.4		90.7	mg/Kg		76.4	114	2	20	
L66732-07MS	MS	07/16/21 4:22	II210708-3	50.1	U	47.55	mg/Kg	95	75	125			
L66732-07MSD	MSD	07/16/21 4:26	II210708-3	50.1	U	47.52	mg/Kg	95	75	125	0	20	

**WG523453**

WG523453ICV	ICV	07/18/21 21:59	II210712-1	2		1.978	mg/L	99	90	110			
WG523453ICB	ICB	07/18/21 22:03				U	mg/L		-0.06	0.06			
WG523131PBS	PBS	07/18/21 22:26				U	mg/Kg		-6	6			
WG523131LCSS	LCSS	07/18/21 22:30	PCN63584	95.4		86.47	mg/Kg		76.4	114			
WG523131LCSSD	LCSSD	07/18/21 22:34	PCN63584	95.4		90.63	mg/Kg		76.4	114	5	20	
L66732-07MS	MS	07/18/21 23:11	II210708-3	50.1	U	47.22	mg/Kg	94	75	125			
L66732-07MSD	MSD	07/18/21 23:14	II210708-3	50.1	U	48.23	mg/Kg	96	75	125	2	20	

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Nickel (1312)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523021</b>													
WG523021ICV	ICV	07/12/21 20:00	MS210630-2	.05		.05007	mg/L	100	90	110			
WG523021ICB	ICB	07/12/21 20:01				U	mg/L		-0.0012	0.0012			
WG522653PBS	PBS	07/12/21 20:11				U	mg/L		-0.0012	0.0012			
WG522653LFB2	LFB	07/12/21 20:13	MS210702-2	.05		.05044	mg/L	101	80	120			
L66691-12MS	MS	07/12/21 20:18	MS210702-2	.05	.00044	.04967	mg/L	98	75	125			
L66691-12MSD	MSD	07/12/21 20:20	MS210702-2	.05	.00044	.0505	mg/L	100	75	125	2	20	
L66691-14DUP	DUP	07/12/21 20:29			.00058	.00057	mg/L				2	20	RA

**WG523066**

WG523066ICV	ICV	07/13/21 14:56	MS210630-2	.05		.05098	mg/L	102	90	110			
WG523066ICB	ICB	07/13/21 14:58				U	mg/L		-0.0012	0.0012			
WG522746PBS	PBS	07/13/21 15:09				U	mg/L		-0.0012	0.0012			
WG522746LFB2	LFB	07/13/21 15:11	MS210702-2	.05		.04811	mg/L	96	80	120			
L66693-04DUP	DUP	07/13/21 15:14			U	U	mg/L				0	20	RA
L66731-09MS	MS	07/13/21 15:20	MS210702-2	.05	.00059	.04869	mg/L	96	75	125			
L66731-09MSD	MSD	07/13/21 15:25	MS210702-2	.05	.00059	.0483	mg/L	95	75	125	1	20	

**WG523321**

WG523321ICV	ICV	07/15/21 15:18	MS210630-2	.05		.05151	mg/L	103	90	110			
WG523321ICB	ICB	07/15/21 15:20				U	mg/L		-0.0012	0.0012			
WG522974PBS	PBS	07/15/21 15:29				U	mg/L		-0.0012	0.0012			
WG522974LFB2	LFB	07/15/21 15:31	MS210702-2	.05		.04807	mg/L	96	80	120			
L66693-02MS	MS	07/15/21 15:36	MS210702-2	.05	.00047	.04781	mg/L	95	75	125			
L66693-02MSD	MSD	07/15/21 15:38	MS210702-2	.05	.00047	.0476	mg/L	94	75	125	0	20	
L66732-17DUP	DUP	07/15/21 16:13			U	U	mg/L				0	20	RA

**Nickel, total (3050)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523339</b>													
WG523339ICV	ICV	07/15/21 15:38	MS210630-2	.05		.04994	mg/L	100	90	110			
WG523339ICB	ICB	07/15/21 15:40				U	mg/L		-0.0012	0.0012			
WG523131PBS	PBS	07/15/21 15:50				U	mg/Kg		-0.6	0.6			
WG523131LCSS	LCSS	07/15/21 15:52	PCN63584	53.9		50.42723	mg/Kg		44.5	63.3			
WG523131LCSSD	LCSSD	07/15/21 15:54	PCN63584	53.9		52.22486	mg/Kg		44.5	63.3	4	20	
L66732-17MS	MS	07/15/21 16:35	MS210521-6	25	1.2	24.69348	mg/Kg	94	75	125			
L66732-17MSD	MSD	07/15/21 16:37	MS210521-6	25	1.2	27.44898	mg/Kg	105	75	125	11	20	

**WG523723**

WG523723ICV	ICV	07/21/21 11:41	MS210630-2	.05		.0506	mg/L	101	90	110			
WG523723ICB	ICB	07/21/21 11:43				U	mg/L		-0.0012	0.0012			
WG523131PBS	PBS	07/21/21 11:54				U	mg/Kg		-0.6	0.6			
WG523131LCSS	LCSS	07/21/21 11:56	PCN63584	53.9		56.71797	mg/Kg		44.5	63.3			
WG523131LCSSD	LCSSD	07/21/21 11:57	PCN63584	53.9		58.1306	mg/Kg		44.5	63.3	2	20	
L66732-17MS	MS	07/21/21 12:03	MS210521-6	25	1.74	32.78416	mg/Kg	124	75	125			
L66732-17MSD	MSD	07/21/21 12:04	MS210521-6	25	1.74	29.42969	mg/Kg	111	75	125	11	20	
WG523545PBS	PBS	07/21/21 12:10				U	mg/Kg		-0.6	0.6			

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**pH, Saturated Paste**

EPA 600/2-78-054 section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523645</b>													
WG523645ICV	ICV	07/20/21 16:33	PCN63115	4.01		4	units	100	3.9	4.1			
L66732-01DUP	DUP	07/20/21 17:07			8	7.96	units				1	20	

**Selenium (1312)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523021</b>													
WG523021ICV	ICV	07/12/21 20:00	MS210630-2	.05		.05021	mg/L	100	90	110			
WG523021ICB	ICB	07/12/21 20:01				.0001	mg/L		-0.0003	0.0003			
WG522653PBS	PBS	07/12/21 20:11				U	mg/L		-0.0003	0.0003			
WG522653LFB2	LFB	07/12/21 20:13	MS210702-2	.05		.05162	mg/L	103	80	120			
L66691-12MS	MS	07/12/21 20:18	MS210702-2	.05	U	.05144	mg/L	103	75	125			
L66691-12MSD	MSD	07/12/21 20:20	MS210702-2	.05	U	.05247	mg/L	105	75	125	2	20	
L66691-14DUP	DUP	07/12/21 20:29			.00011	U	mg/L				200	20	RA
<b>WG523066</b>													
WG523066ICV	ICV	07/13/21 14:56	MS210630-2	.05		.05078	mg/L	102	90	110			
WG523066ICB	ICB	07/13/21 14:58				.00012	mg/L		-0.0003	0.0003			
WG522746PBS	PBS	07/13/21 15:09				U	mg/L		-0.0003	0.0003			
WG522746LFB2	LFB	07/13/21 15:11	MS210702-2	.05		.0498	mg/L	100	80	120			
L66693-04DUP	DUP	07/13/21 15:14			.00011	U	mg/L				200	20	RA
L66731-09MS	MS	07/13/21 15:20	MS210702-2	.05	.0002	.05042	mg/L	100	75	125			
L66731-09MSD	MSD	07/13/21 15:25	MS210702-2	.05	.0002	.04997	mg/L	100	75	125	1	20	
<b>WG523321</b>													
WG523321ICV	ICV	07/15/21 15:18	MS210630-2	.05		.05141	mg/L	103	90	110			
WG523321ICB	ICB	07/15/21 15:20				U	mg/L		-0.0003	0.0003			
WG522974PBS	PBS	07/15/21 15:29				U	mg/L		-0.0003	0.0003			
WG522974LFB2	LFB	07/15/21 15:31	MS210702-2	.05		.04845	mg/L	97	80	120			
L66693-02MS	MS	07/15/21 15:36	MS210702-2	.05	U	.04899	mg/L	98	75	125			
L66693-02MSD	MSD	07/15/21 15:38	MS210702-2	.05	U	.04907	mg/L	98	75	125	0	20	
L66732-17DUP	DUP	07/15/21 16:13			U	U	mg/L				0	20	RA

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Selenium, total (3050)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523339</b>													
WG523339ICV	ICV	07/15/21 15:38	MS210630-2	.05		.05001	mg/L	100	90	110			
WG523339ICB	ICB	07/15/21 15:40				.0001	mg/L		-0.0003	0.0003			
WG523131PBS	PBS	07/15/21 15:50				U	mg/Kg		-0.15	0.15			
WG523131LCSS	LCSS	07/15/21 15:52	PCN63584	167		166.43585	mg/Kg		132	201			
WG523131LCSSD	LCSSD	07/15/21 15:54	PCN63584	167		170.10812	mg/Kg		132	201	2	20	
L66732-17MS	MS	07/15/21 16:35	MS210521-6	12.5	.152	11.8752	mg/Kg	94	75	125			
L66732-17MSD	MSD	07/15/21 16:37	MS210521-6	12.5	.152	13.90009	mg/Kg	110	75	125	16	20	

**WG523656**

WG523656ICV	ICV	07/20/21 19:44	MS210630-2	.05		.04889	mg/L	98	90	110			
WG523656ICB	ICB	07/20/21 19:46				U	mg/L		-0.0003	0.0003			
WG523131PBS	PBS	07/20/21 19:55				.0515	mg/Kg		-0.15	0.15			
WG523131LCSS	LCSS	07/20/21 19:57	PCN63584	167		147.23599	mg/Kg		132	201			
WG523131LCSSD	LCSSD	07/20/21 19:59	PCN63584	167		146.43923	mg/Kg		132	201	1	20	
L66732-17MS	MS	07/20/21 20:06	MS210521-6	12.5	.0801	11.38637	mg/Kg	90	75	125			
L66732-17MSD	MSD	07/20/21 20:12	MS210521-6	12.5	.0801	11.32148	mg/Kg	90	75	125	1	20	

**Solids, Percent**

D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG522459</b>													
L66732-01DUP	DUP	07/02/21 16:33			99.9	99.9	%				0	20	
WG522459PBS	PBS	07/05/21 8:50				U	%		-0.1	0.1			

**Sulfur, total**

ASTM D-4239-85C, LECO Furnace

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523117</b>													
WG523117PBS	PBS	07/19/21 13:00				U	%		-0.03	0.03			
WG523117LCSS	LCSS	07/19/21 13:06	PCN61786	4.01		3.31	%	83	80	120			
L66732-01MS	MS	07/19/21 13:18	PCN62544	1.3	U	1.18	%	91	80	120			
L66732-01DUP	DUP	07/19/21 13:24			U	U	%				0	20	RA

**Hudbay Minerals**

ACZ Project ID: **L66732**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Thallium (1312)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523021</b>													
WG523021ICV	ICV	07/12/21 20:00	MS210630-2	.05		.05143	mg/L	103	90	110			
WG523021ICB	ICB	07/12/21 20:01				U	mg/L		-0.0003	0.0003			
WG522653PBS	PBS	07/12/21 20:11				U	mg/L		-0.0003	0.0003			
WG522653LFB2	LFB	07/12/21 20:13	MS210702-2	.05		.05016	mg/L	100	80	120			
L66691-12MS	MS	07/12/21 20:18	MS210702-2	.05	U	.05021	mg/L	100	75	125			
L66691-12MSD	MSD	07/12/21 20:20	MS210702-2	.05	U	.05098	mg/L	102	75	125	2	20	
L66691-14DUP	DUP	07/12/21 20:29			U	U	mg/L				0	20	RA

**WG523066**

WG523066ICV	ICV	07/13/21 14:56	MS210630-2	.05		.05152	mg/L	103	90	110			
WG523066ICB	ICB	07/13/21 14:58				U	mg/L		-0.0003	0.0003			
WG522746PBS	PBS	07/13/21 15:09				U	mg/L		-0.0003	0.0003			
WG522746LFB2	LFB	07/13/21 15:11	MS210702-2	.05		.04804	mg/L	96	80	120			
L66693-04DUP	DUP	07/13/21 15:14			U	U	mg/L				0	20	RA
L66731-09MS	MS	07/13/21 15:20	MS210702-2	.05	U	.04828	mg/L	97	75	125			
L66731-09MSD	MSD	07/13/21 15:25	MS210702-2	.05	U	.04821	mg/L	96	75	125	0	20	

**WG523321**

WG523321ICV	ICV	07/15/21 15:18	MS210630-2	.05		.05225	mg/L	105	90	110			
WG523321ICB	ICB	07/15/21 15:20				U	mg/L		-0.0003	0.0003			
WG522974PBS	PBS	07/15/21 15:29				U	mg/L		-0.0003	0.0003			
WG522974LFB2	LFB	07/15/21 15:31	MS210702-2	.05		.0469	mg/L	94	80	120			
L66693-02MS	MS	07/15/21 15:36	MS210702-2	.05	U	.0479	mg/L	96	75	125			
L66693-02MSD	MSD	07/15/21 15:38	MS210702-2	.05	U	.04753	mg/L	95	75	125	1	20	
L66732-17DUP	DUP	07/15/21 16:13			U	U	mg/L				0	20	RA

**Thallium, total (3050)**

M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523339</b>													
WG523339ICV	ICV	07/15/21 15:38	MS210630-2	.05		.05161	mg/L	103	90	110			
WG523339ICB	ICB	07/15/21 15:40				.00017	mg/L		-0.0003	0.0003			
WG523131PBS	PBS	07/15/21 15:50				U	mg/Kg		-0.15	0.15			
WG523131LCSS	LCSS	07/15/21 15:52	PCN63584	112		114.8959	mg/Kg		90.3	133			
WG523131LCSSD	LCSSD	07/15/21 15:54	PCN63584	112		119.02079	mg/Kg		90.3	133	4	20	
L66732-17MS	MS	07/15/21 16:35	MS210521-6	25	U	25.78771	mg/Kg	103	75	125			
L66732-17MSD	MSD	07/15/21 16:37	MS210521-6	25	U	29.89008	mg/Kg	120	75	125	15	20	

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NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Zinc (1312)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523072</b>													
WG523072ICV	ICV	07/13/21 10:56	II210712-1	2		1.926	mg/L	96	90	110			
WG523072ICB	ICB	07/13/21 11:00				U	mg/L		-0.06	0.06			
WG522653PBS	PBS	07/13/21 11:24				.156	mg/L		-0.06	0.06			BF
WG522653LFB1	LFB	07/13/21 11:28	II210708-3	.50045		.564	mg/L	113	80	120			
L66691-11MS	MS	07/13/21 11:36	II210708-3	.50045	U	.508	mg/L	102	75	125			
L66691-11MSD	MSD	07/13/21 11:40	II210708-3	.50045	U	.509	mg/L	102	75	125	0	20	
L66691-14DUP	DUP	07/13/21 11:55			U	U	mg/L				0	20	RA

**WG523103**

WG523103ICV	ICV	07/13/21 21:33	II210712-1	2		1.907	mg/L	95	90	110			
WG523103ICB	ICB	07/13/21 21:36				U	mg/L		-0.06	0.06			
WG522746PBS	PBS	07/13/21 22:00				U	mg/L		-0.06	0.06			
WG522746LFB1	LFB	07/13/21 22:04	II210708-3	.50045		.508	mg/L	102	80	120			
L66693-04DUP	DUP	07/13/21 22:11			U	U	mg/L				0	20	RA
L66693-05MS	MS	07/13/21 22:19	II210708-3	.50045	U	.503	mg/L	101	75	125			
L66693-05MSD	MSD	07/13/21 22:22	II210708-3	.50045	U	.512	mg/L	102	75	125	2	20	

**WG523284**

WG523284ICV	ICV	07/15/21 11:04	II210712-1	2		1.963	mg/L	98	90	110			
WG523284ICB	ICB	07/15/21 11:08				U	mg/L		-0.06	0.06			
WG522974PBS	PBS	07/15/21 11:32				U	mg/L		-0.06	0.06			
WG522974LFB1	LFB	07/15/21 11:36	II210708-3	.50045		.514	mg/L	103	80	120			
L66693-01MS	MS	07/15/21 11:44	II210708-3	.50045	U	.507	mg/L	101	75	125			
L66693-01MSD	MSD	07/15/21 11:48	II210708-3	.50045	U	.5	mg/L	100	75	125	1	20	
L66732-17DUP	DUP	07/15/21 13:06			U	U	mg/L				0	20	RA

**Zinc, total (3050)**

M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
<b>WG523283</b>													
WG523283ICV	ICV	07/16/21 3:07	II210712-1	2		2.037	mg/L	102	90	110			
WG523283ICB	ICB	07/16/21 3:10				U	mg/L		-0.06	0.06			
WG523131PBS	PBS	07/16/21 3:34				U	mg/Kg		-6	6			
WG523131LCSS	LCSS	07/16/21 3:38	PCN63584	158		150	mg/Kg		128	188			
WG523131LCSSD	LCSSD	07/16/21 3:41	PCN63584	158		152.1	mg/Kg		128	188	1	20	
L66732-07MS	MS	07/16/21 4:22	II210708-3	50.045	26.7	84.28	mg/Kg	115	75	125			
L66732-07MSD	MSD	07/16/21 4:26	II210708-3	50.045	26.7	85.93	mg/Kg	118	75	125	2	20	
<b>WG523453</b>													
WG523453ICV	ICV	07/18/21 21:59	II210712-1	2		1.926	mg/L	96	90	110			
WG523453ICB	ICB	07/18/21 22:03				U	mg/L		-0.06	0.06			
WG523131PBS	PBS	07/18/21 22:26				U	mg/Kg		-6	6			
WG523131LCSS	LCSS	07/18/21 22:30	PCN63584	158		142.1	mg/Kg		128	188			
WG523131LCSSD	LCSSD	07/18/21 22:34	PCN63584	158		149.7	mg/Kg		128	188	5	20	
L66732-07MS	MS	07/18/21 23:11	II210708-3	50.045	27.7	80.52	mg/Kg	106	75	125			
L66732-07MSD	MSD	07/18/21 23:14	II210708-3	50.045	27.7	84.98	mg/Kg	114	75	125	5	20	

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66732-01	WG523072	Aluminum (1312)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523021	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523021	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523021	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523021	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523072	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523021	Lead (1312)	M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523072	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					validation because the sample concentration was less than 50 times the MDL.
	WG523072	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523162	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522547	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG523072	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523021	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523021	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523072	Zinc (1312)	M6010D ICP	BF	Target analyte in prep / method blank at or above the acceptance criteria. Target analyte was not detected in the sample [< MDL].
			M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L66732-02</b>	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523066	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523066	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523066	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523066	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523103	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523066	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523103	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					validation because the sample concentration was less than 50 times the MDL.
	WG523103	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523163	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522547	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG523103	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523066	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523066	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523103	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L66732-03</b>	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523066	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523066	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523066	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523066	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523103	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523066	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523103	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data

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					validation because the sample concentration was less than 50 times the MDL.
	WG523103	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523163	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522547	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG523103	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523066	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523066	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523103	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L66732-04</b>	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523066	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523066	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523066	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523066	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523103	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523066	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523103	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data

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					validation because the sample concentration was less than 50 times the MDL.
	WG523103	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523163	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522547	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG523103	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523066	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523066	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523103	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66732-05	WG523072	Aluminum (1312)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523021	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523021	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523021	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523021	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523072	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523021	Lead (1312)	M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523072	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data

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	WG523072	Manganese (1312)	M6010D ICP	RA	validation because the sample concentration was less than 50 times the MDL.
	WG523162	Mercury (1312)	M7470A CVAA M7470A CVAA	Q6 RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL). Sample was received above recommended temperature.
	WG522695	Mercury by Direct Combustion AA	M7473 CVAAS M7473 CVAAS	Q6 RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL). Sample was received above recommended temperature.
	WG523072	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523021	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523021	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523072	Zinc (1312)	M6010D ICP  M6010D ICP	BF RA	Target analyte in prep / method blank at or above the acceptance criteria. Target analyte was not detected in the sample [< MDL]. Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66732-06	WG523072	Aluminum (1312)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523021	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523021	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523021	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523723	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523072	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523021	Lead (1312)	M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523072	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data

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					validation because the sample concentration was less than 50 times the MDL.
	WG523072	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523162	Mercury (1312)	M7470A CVAAS	Q6	Sample was received above recommended temperature.
			M7470A CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522695	Mercury by Direct Combustion AA	M7473 CVAAS	DJ	Sample dilution required due to insufficient sample.
			M7473 CVAAS	N1	See Case Narrative.
			M7473 CVAAS	Q6	Sample was received above recommended temperature.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523072	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523021	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523021	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523072	Zinc (1312)	M6010D ICP	BF	Target analyte in prep / method blank at or above the acceptance criteria. Target analyte was not detected in the sample [< MDL].
			M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66732-07	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523066	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523066	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523066	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523066	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523103	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523066	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523103	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data

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					validation because the sample concentration was less than 50 times the MDL.
	WG523103	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523163	Mercury (1312)	M7470A CVAA M7470A CVAA	Q6	Sample was received above recommended temperature.
				RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522654	Mercury by Direct Combustion AA	M7473 CVAAS M7473 CVAAS	Q6	Sample was received above recommended temperature.
				RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523103	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523066	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523066	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523103	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
<b>L66732-08</b>	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523066	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523066	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523066	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523066	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523103	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523066	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523103	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data

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					validation because the sample concentration was less than 50 times the MDL.
	WG523103	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523163	Mercury (1312)	M7470A CVAA M7470A CVAA	Q6	Sample was received above recommended temperature.
				RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522654	Mercury by Direct Combustion AA	M7473 CVAAS M7473 CVAAS	Q6	Sample was received above recommended temperature.
				RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523103	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523066	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523066	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523103	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66732-09	WG523320	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523321	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523321	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523284	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523284	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523284	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523165	Mercury (1312)	M7470A CVAA M7470A CVAA	Q6	Sample was received above recommended temperature.
				RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522654	Mercury by Direct Combustion AA	M7473 CVAAS M7473 CVAAS	Q6	Sample was received above recommended temperature.
				RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523284	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523284	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66732-10	WG523320	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523321	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523321	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523284	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above

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					acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523284	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523284	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523165	Mercury (1312)	M7470A CVAA M7470A CVAA	Q6	Sample was received above recommended temperature.
				RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522654	Mercury by Direct Combustion AA	M7473 CVAAS M7473 CVAAS	Q6	Sample was received above recommended temperature.
				RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523284	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523284	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66732-11	WG523320	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523321	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523321	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523284	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523284	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523284	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523165	Mercury (1312)	M7470A CVAA M7470A CVAA	Q6	Sample was received above recommended temperature.
				RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522654	Mercury by Direct Combustion AA	M7473 CVAAS M7473 CVAAS	Q6	Sample was received above recommended temperature.
				RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523284	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523284	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ Project ID: **L66732**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66732-12	WG523320	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523321	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523321	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523284	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523284	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523284	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523165	Mercury (1312)	M7470A CVAA M7470A CVAA	Q6	Sample was received above recommended temperature.
				RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522654	Mercury by Direct Combustion AA	M7473 CVAAS M7473 CVAAS	Q6	Sample was received above recommended temperature.
				RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523284	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523284	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ Project ID: **L66732**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66732-13	WG523320	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523321	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523321	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523284	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523284	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523284	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523165	Mercury (1312)	M7470A CVAA M7470A CVAA	Q6	Sample was received above recommended temperature.
				RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522654	Mercury by Direct Combustion AA	M7473 CVAAS M7473 CVAAS	Q6	Sample was received above recommended temperature.
				RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523284	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523284	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66732-14	WG523320	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523321	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523321	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523284	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523284	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Magnesium, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523284	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523165	Mercury (1312)	M7470A CVAA M7470A CVAA	Q6	Sample was received above recommended temperature.
				RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522654	Mercury by Direct Combustion AA	M7473 CVAAS M7473 CVAAS	Q6	Sample was received above recommended temperature.
				RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523284	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523284	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523283	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Hudbay Minerals

ACZ Project ID: **L66732**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66732-15	WG523320	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523321	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523321	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523453	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523284	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above

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Hudbay Minerals

ACZ Project ID: **L66732**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523284	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523165	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522654	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
			M7473 CVAAS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523284	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523284	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523453	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ Project ID: **L66732**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66732-16	WG523320	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523321	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523321	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523453	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523284	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above

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ACZ Project ID: **L66732**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523284	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523165	Mercury (1312)	M7470A CVAA M7470A CVAA	Q6 RA	Sample was received above recommended temperature. Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522654	Mercury by Direct Combustion AA	M7473 CVAAS M7473 CVAAS	Q6 RD	Sample was received above recommended temperature. For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523284	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523284	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523453	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Hudbay Minerals

ACZ Project ID: **L66732**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66732-17	WG523320	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523453	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523321	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523339	Arsenic, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523321	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523453	Calcium, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG523113	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG523339	Copper, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523284	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523506	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG523321	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG523339	Lead, total (3050)	M6020B ICP-MS	BB	Target analyte detected in calibration blank at or above

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Hudbay Minerals

ACZ Project ID: **L66732**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG523284	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523165	Mercury (1312)	M7470A CVAA M7470A CVAA	Q6	Sample was received above recommended temperature.
				RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG522654	Mercury by Direct Combustion AA	M7473 CVAAS M7473 CVAAS	Q6	Sample was received above recommended temperature.
				RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG523284	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523117	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523321	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523284	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG523453	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

**Hudbay Minerals**

ACZ Project ID: **L66732**

**Metals Analysis**

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Selenium (1312)	M6020B ICP-MS
Selenium, total (3050)	M6020B ICP-MS

**Soil Analysis**

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
Conductivity @25C	SM2510B
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2
Solids, Percent	D2216-80
Sulfur, total	ASTM D-4239-85C, LECO Furnace

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
Conductivity @25C	SM2510B
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2
Solids, Percent	D2216-80
Sulfur, total	ASTM D-4239-85C, LECO Furnace

Hudbay Minerals

ACZ Project ID: L66732

Date Received: 06/24/2021 13:44

Received By:

Date Printed: 6/25/2021

#### Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2) Is the Chain of Custody form or other directive shipping papers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Does this project require special handling procedures such as CLP protocol?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4) Are any samples NRC licensable material?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5) If samples are received past hold time, proceed with requested short hold time analyses?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Is the Chain of Custody form complete and accurate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) Are all labels on containers and are they intact and legible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11) For preserved bottle types, was the pH checked and within limits? <sup>1</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12) Is there sufficient sample volume to perform all requested work?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13) Is the custody seal intact on all containers?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14) Are samples that require zero headspace acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15) Are all sample containers appropriate for analytical requirements?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16) Is there an Hg-1631 trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17) Is there a VOA trip blank present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18) Were all samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NA indicates Not Applicable

#### Chain of Custody Related Remarks

#### Client Contact Remarks

#### Shipping Containers

Cooler Id	Temp (°C)	Temp Criteria (°C)	Rad (µR/Hr)	Custody Seal Intact?
NA35328	22.9	NA	16	N/A

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

Hudbay Minerals

ACZ Project ID: L66732

Date Received: 06/24/2021 13:44

Received By:

Date Printed: 6/25/2021

<sup>1</sup> The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).



**Laboratories, Inc.** *L66732*

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

**CHAIN of CUSTODY**

**Report to:**

Name: Holly Beggy  
Company: Hudbay Minerals  
E-mail: holly.beggy@hudsonminerals.com

Address: 5255 E. Williams Circle, Suite 1065  
Telephone: 520-343-5174

**Copy of Report to:**

Name: David Krizek  
Company: david.krizek@hudsonminerals.com

E-mail: 5255 E. Williams Circle, Suite 1065  
Telephone: 520-495-3527

**Invoice to:**

Name: Lionelyn Garcia  
Company: Hudbay Minerals  
E-mail: rosemontinvoices@hudsonminerals.com

Address: 5255 E. Williams Circle, Suite 1065  
Telephone: 520-495-3545

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES ☒  
NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring?

Yes ☐ No ☒

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Corey Archer Sampler's Site Information State AZ Zip code 85629 Time Zone AZ

\*Sampler's Signature: *[Signature]*

\*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

**PROJECT INFORMATION**

ANALYSES REQUESTED (attach list or use quote number)

Quote #: 2021-SOILS

PO#:

Reporting state for compliance testing: No

Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION			DATE:TIME	Matrix	# of Containers	Drainage-1 (Under Plant)	Drainage 1-2-3-4	Ina Road WWTP-Soil	Plant Tissue								
DAW-1			6/10/21, 11:27	SO	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DAW-2			6/14/21, 10:10	SO	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DAW-3			6/14/21, 9:40	SO	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DAW-4			6/14/21, 9:40	SO	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D2-18			6/10/21, 9:23	SO	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D2-19			6/10/21, 10:44	SO	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D2-20			6/14/21, 7:24	SO	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D2-21			6/14/21, 7:24	SO	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D1-1			6/16/21, 7:42	SO	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D1-2			6/16/21, 8:23	SO	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

**REMARKS**

Samples have been sieved to 4mm with a #5 sieve.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:

DATE:TIME

RECEIVED BY:

DATE:TIME

<u>Corey Archer</u>	<u>6/18/21, 1:00pm</u>	<u>Holly Beggy</u>	<u>6/18/21, 10:48</u>
<u>Holly Beggy</u>	<u>6/22/21, 11:45</u>	<u>Holly Beggy</u>	<u>6/22/21, 11:45</u>
		<u>Donna</u>	<u>6/24/21, 13:44</u>

FRMAD050.06.14.14

White - Return with sample. Yellow - Retain for your records.

L66732 Chain of Custody



L66732

**Laboratories, Inc.**

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

**CHAIN of CUSTODY**

**Report to:**

Name: Holly Beggy  
Company: Hudbay Minerals  
E-mail: holly.beggy@hudbayminerals.com

Address: 5255 E. Williams Circle, Suite 1065  
Telephone: 520-343-5174

**Copy of Report to:**

Name: David Krizek  
Company: david.krizek@hudbayminerals.com

E-mail: 5255 E. Williams Circle, Suite 1065  
Telephone: 520-495-3527

**Invoice to:**

Name: Lionelyn Garcia  
Company: Hudbay Minerals  
E-mail: rosemontinvoices@hudbayminerals.com

Address: 5255 E. Williams Circle, Suite 1065  
Telephone: 520-495-3545

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES ☒  
NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring?

Yes ☐ No ☒

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Corey Archer Sampler's Site Information State AZ Zip code 85629 Time Zone AZ

Sampler's Signature: [Signature]

\*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

**PROJECT INFORMATION**

ANALYSES REQUESTED (attach list or use quote number)

Quote #: 2021-SOILS

PO#:

Reporting state for compliance testing: No

Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION			DATE:TIME	Matrix	# of Containers	Drainage-1 (Under Plant)	Drainage 1-2-3-4	Ina Road WWTP-Soil	Plant Tissue								
D1-3			6/16/21, 10:01	So	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D1-4			6/16/21, 11:10	So	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D1-5			6/16/21, 11:58	So	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D1-6			6/17/21, 8:33	So	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D1-7			6/17/21, 9:35	So	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D1-8			6/17/21, 10:26	So	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D1-9			6/17/21, 10:57	So	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

**REMARKS**

Samples have been sieved to 4mm with a #5 sieve.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:

DATE:TIME

RECEIVED BY:

DATE:TIME

Corey Archer	6/18/21 10:49	Holly Beggy	6/18/21 10:49
Holly Beggy	6/22/21, 11:45	Holly Beggy	6/22/21 10:49

FRMAD050.06.14.14

White - Return with sample.

Yellow - Retain for your records.

# ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

## Analytical Quote

Holly Beggy  
Hudbay Minerals  
5255 E Williams Circle Suite W1065  
Tucson, AZ 85711

Page 4 of 9  
6/17/2021

### Quote Number: DRAINAGE-2-3-4

Matrix: Soil

Drainages 2, 3 & 4: 96 samples: SPLP, TIC, TS, 3050 Metals, Paste PH & EC

Parameter	Method	Detection Limit	Cost/Sample
<b>Diskette/QC Summary</b>			
Quality Control Summary			\$0.00
<b>Inorganic Prep</b>			
Total Hot Plate Digestion	M3010A ICP		\$0.00
Total Hot Plate Digestion	M3010A ICP-MS		\$0.00
<b>Metals Analysis</b>			
Aluminum (1312)	M6010D ICP	0.05 mg/L	\$7.50
Aluminum, total (3050)	M6010D ICP	5 mg/Kg	\$7.50
Antimony (1312)	M6020B ICP-MS	0.0004 mg/L	\$12.00
Antimony, total (3050)	M6020B ICP-MS	0.2 mg/Kg	\$12.00
Arsenic (1312)	M6020B ICP-MS	0.0002 mg/L	\$12.00
Arsenic, total (3050)	M6020B ICP-MS	0.1 mg/Kg	\$12.00
Cadmium (1312)	M6020B ICP-MS	0.00005 mg/L	\$12.00
Cadmium, total (3050)	M6020B ICP-MS	0.025 mg/Kg	\$12.00
Calcium (1312)	M6010D ICP	0.1 mg/L	\$7.50
Calcium, total (3050)	M6010D ICP	10 mg/Kg	\$7.50
Copper (1312)	M6020B ICP-MS	0.0008 mg/L	\$12.00
Copper, total (3050)	M6020B ICP-MS	0.4 mg/Kg	\$12.00
Iron (1312)	M6010D ICP	0.06 mg/L	\$7.50
Iron, total (3050)	M6010D ICP	6 mg/Kg	\$7.50
Lead (1312)	M6020B ICP-MS	0.0001 mg/L	\$12.00
Lead, total (3050)	M6020B ICP-MS	0.05 mg/Kg	\$12.00
Magnesium (1312)	M6010D ICP	0.2 mg/L	\$7.50
Magnesium, total (3050)	M6010D ICP	20 mg/Kg	\$7.50
Manganese (1312)	M6010D ICP	0.01 mg/L	\$7.50
Manganese, total (3050)	M6010D ICP	1 mg/Kg	\$7.50
Mercury (1312)	M7470A CVAA	0.0002 mg/L	\$20.00
Mercury by Direct Combustion AA	M7473 CVAAS	2 ng/g	\$19.50
Molybdenum (1312)	M6010D ICP	0.02 mg/L	\$7.50
Molybdenum, total (3050)	M6010D ICP	2 mg/Kg	\$7.50
Nickel (1312)	M6020B ICP-MS	0.0004 mg/L	\$12.00
Nickel, total (3050)	M6020B ICP-MS	0.2 mg/Kg	\$12.00
Selenium (1312)	M6020B ICP-MS	0.0001 mg/L	\$12.00
Selenium, total (3050)	M6020B ICP-MS	0.05 mg/Kg	\$12.00
Thallium (1312)	M6020B ICP-MS	0.0001 mg/L	\$12.00

REPAD.09.06.05.01

S/ tjv D/ 21 P/

# ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

## Analytical Quote

Holly Beggy  
Hudbay Minerals  
5255 E Williams Circle Suite W1065  
Tucson, AZ 85711

Page 5 of 9  
6/17/2021

Thallium, total (3050)	M6020B ICP-MS	0.05 mg/Kg	\$12.00
Zinc (1312)	M6010D ICP	0.02 mg/L	\$7.50
Zinc, total (3050)	M6010D ICP	2 mg/Kg	\$7.50
<b>Misc.</b>			
Electronic Data Deliverable			\$0.00
<b>Sample Preparation</b>			
Air Dry at 34 Degrees C	USDA No. 1, 1972		\$6.25
Digestion - Hot Plate	M3050B ICP		\$12.75
Digestion - Hot Plate	M3050B ICP-MS		\$0.00
Saturated Paste Extraction	USDA No. 60 (2)		\$13.00
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2		\$9.25
Synthetic Precip. Leaching Procedure	M1312		\$58.00
<b>Soil Analysis</b>			
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.1 %	\$14.00
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	0.1 %	\$0.00
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.1 %	\$22.00
Conductivity @25C	SM2510B	0.001 mmhos/cm	\$6.25
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2	0.1 units	\$6.25
Solids, Percent	D2216-80	0.1 %	\$6.25
Sulfur, total	ASTM D-4239-85C, LECO Furnace	0.01 %	\$14.00
<b>Cost/Sample:</b>			<b>\$504.50</b>

This quote is based on a Standard Turn Around Time of approximately 21 days for soil and solid matrices (15 business days). TAT may vary with seasonal heavy workload. Please contact your PM if rush TAT is required. Rush TAT needs to be pre-approved prior to sample shipment to assure that due dates can be met. Pricing includes standard reporting formats and standard ACZ EDDs. All projects received are subject to a \$150.00 Minimum Charge. Please note that method detection limits are estimates and may be elevated depending on sample matrix that require dilution. Pricing includes coolers, soil jars or bags, labels, COCs and ice-packs (if needed for your analysis), shipped to your site or office via UPS ground. Return shipping is the responsibility of the client. Please allow ample time for your bottles to arrive. Please note that soil preparation charges may change based on the condition and volume of sample(s) upon receipt. Wet samples may increase the TAT if air-drying is needed required.

REPAD.09.06.05.01

S/ tjv D/ 21 P/